Industrial Finishing

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An Independent Publication Devoted to the Finishing of Industrial Products

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Manufacturers seeking for that "elusive something" which will give to their product a richness of finish so different as to be instantly compelling in its *appeal to the eye*, will find the answer to their problem in Hilo Pearl Lacquer.

This transparent finish, with its pearl content, sprayed, dipped, or brushed over colored lacquers or enamels, produces a depth of tone and an irridescence impossible to obtain with any other type of finish. *Not more than two coats need be applied*, otherwise, the high pearl content will obscure the color.

Hilo Pearl Lacquer for spraying or brushing should be reduced equal parts with Hilo Lacquer Thinner. For dipping, material should be used at full body.

Hilo Lacquer Enamels may be mixed with Hilo Pearl Lacquer, 7 parts Pearl Lacquer to 1 part Enamel of the desired color. This mixture should be reduced with equal parts of Hilo Lacquer Thinner, for spraying.

Two or more coats should be applied—the more coats the deeper and richer will be the finish. For best results, the last coat, when thoroughly dry, should be polished.

Investigate the sales stimulating possibilities of Hilo Pearl Lacquer for *your* product.

HILO VARNISH CORPORATION

Enamels — Japans — Varnishes — Lacquers

Brooklyn — Chicago — Philadelphia — Boston

From the Editor's Desk

BE CAREFUL about the finish on your products, but first be doubly careful about the surface under the finish. I just learned of a case wherein most of the finish flaked off six wire wheels of a popular 1932 automobile shortly after it was purchased. Of course, the owner complained to the dealer and the dealer promptly made good by repainting all six wire wheels—but that new car owner, and many people who have heard of his experience, can't put out of their minds certain questions.

Will the new paint job hold up satisfactorily? Has the cause of the original flaking been removed? What really was the cause of it? Will this happen to the wire wheel finish of other cars of that make, and if so how many? These are not pleasant questions for customers and prospective buyers to be thinking about your product, even though you know that only one or a few out of several hundred thousand were afflicted with "flaking finish."

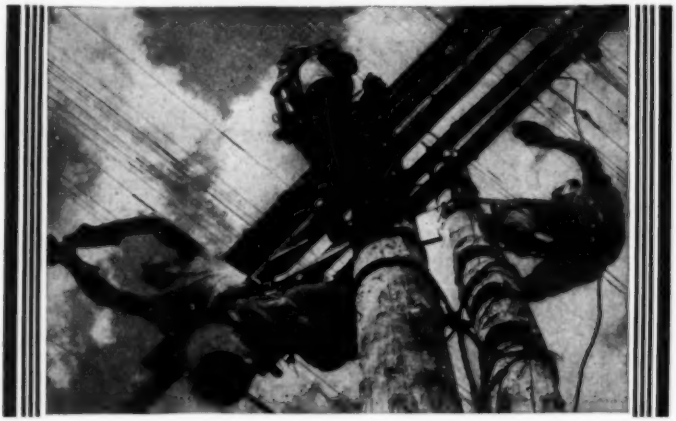
Buyers expect a durable, attractive finish on the majority of finished articles. they purchase, even if those articles are in the low priced class. Remember one of the former automobile slogans "Winning and Holding Goodwill"? This applies to the finish as well as to mechanical and utility features.

* * *

THE TIME of year is at hand for all kinds of refinishing and painting. A well directed appeal to people's sense of pride, ownership and presentability will produce profitable refinishing and painting business—and some of this work can be handled effectively in the finishing rooms of manufacturers of new goods, as well as in the numerous refinishing shops.

W. H. Rohr

Managing Editor



A Good Connection

When a source of supply for spray-finishing equipment is to be selected, industrial finishers will do well to ask questions and demand the answers. Is it fast? Is it economical? Can you depend upon it, year-in and year-out? Is there a model, or a unit, or a type to fit your particular needs. Is it reasonably priced and backed by a reputable maker?

Because DeVilbiss has been able to answer all these questions with a proven "Yes", it has long been accepted as the standard source of supply for spray-finishing equipment for finishing rooms throughout industry. When it comes to equipment to apply protective or decorative coatings, DeVilbiss Leadership has been earned.

There is a DeVilbiss man near you. Send for him. Or write.

DeVilbiss

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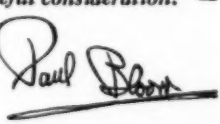
Direct sales and service representatives available everywhere.

The wide and comprehensive experience of DeVilbiss engineers in designing special automatic and semi-automatic equipment is available to meet any new and unusual finishing requirements in your plant.

Do Cheap Finishes Pay?

by PAUL BLOOM

"While this article does not deal with a specific technical problem, it does cover something that readers of* INDUSTRIAL FINISHING *should bear in mind, particularly at this time. I cannot help but feel that the problem of the so-called economizing in finishes is one that should receive much more attention than it has in the past, not only because it is false economy much of the time, but also because in most instances it really is a detriment to the concern. We cannot get away from the fact that the finish is just as much a part of any product as the wood or metal from which it is made, and as such should receive just as careful consideration." —



CUT COST! is the command, and the metal finisher begins to figure. Here is a pigmented lacquer that will cover in one coat. Here is another one that will reduce 75/25. And so on until he very likely decides finally to standardize on a one-coat lacquer job to replace what used to be two coats of lacquer over a primer or a baked enamel finish.

The wood finisher has to have more than one coat, so he begins to figure how to cut down the coats and to use something cheaper. A job that heretofore was stained and filled, now is just filled; or perhaps it is not even filled—just coated with one coat of a transparent colored lacquer. Still, it is called a finish. Then too, where several coats of clear lacquer were applied, only one coat of heavy-bodied lacquer is applied.

These are all covered under the general heading of economizing. Yet, is it economy?

Suppose we get down to fundamentals—get back to 1914 as one writer has put it. For example, we may use the experience of a manufacturer of metal novelties. This concern has been in business since 1912. They have built a good-will that is second to none and repeatedly have been awarded contracts at prices above their competitors because of their reliability.

Before they found it necessary to cut costs, they were using baking enamels and lacquers. But the lacquers were applied over a primer, and generally two coats of lacquer were used. They had to cut costs. The finish was changed throughout their line to one coat of lacquer on metal because it was fast, gave a good looking finish, and did not look like a cheap job.

Everything went along pretty well for a while, but the strain began to tell. Their trade returned merchandise because the finish was chipped or worn off before the goods were sold. A few consumers returned their merchandise, although the bulk of it was left in the user's hands, but it is

safe to say that three fourths of it was not satisfactory.

If the problem ended there, it could be excused on the ground that the consumer got just what he paid for. But let us look in the plant. Since only one coat of lacquer was being applied, the metal had to be thoroughly cleaned. It was washed carefully in a cheap lacquer thinner to remove any dirt that was present. Despite all precautions, however, there always were some spots of oil on the surface, and when the lacquer was applied it naturally lifted right off. Then too, there were rust spots, rough places and sharp edges to which it was impossible to make the lacquer stick.

Are manufacturers really saving money by cutting their finishing costs so radically? Perhaps each piece that is shipped costs less; perhaps unfair shyster competition may be met in this manner—but what is going to be the result a year or two from now?

A Wood Finishing Example

Another concern, a wood finisher, also may serve as an excellent example. The wood was water stained, filled with a 12-hour filler, sealed with shellac and at least two or three coats of clear lacquer were applied; that was before the cuts. The depression came along and they had to cut to the bone. The finish now consists of a filler coat, a low-priced sealer and a cheap lacquer topcoat. This finish costs much less than the former in dollars and cents, but none of their salesmen are proud of their line; they sell it only because it is cheap.

This concern, like the former, is an old firm with a good reputation for quality. In both of these cases, if the companies continue along these lines, it is safe to say that a year from now their good-will won't be worth a dollar. The former concern, has already recognized this danger and is finding other ways to keep their prices in line with the general market—rather than following the suicidal policy of meeting all price competition.

The fact is true that prices and costs have to be reduced, but there is no necessity to cut beyond the cost of production plus a fair margin of profit. This policy is not one to boost sales figures—but ask any business man who knows what he is doing, and he will always tell you that $10,000 worth of business at a profit is far better than ten times that amount at no profit.

Present raw-products costs have been reduced because of limited demand. These reductions have been passed all along the line, reducing the cost of any finished product. Clear lacquers of the same quality are now $.25 to $1.00 a gallon cheaper. This saving represents the percentage on which any finished product should be reduced. A cut in quality may allow a still greater reduction, but to cut quality beyond the point of utility is suicide for any concern.

A sensible study of a finish, limiting it to those coats necessary for quality, will reveal the true economy that can be effected. But wholesale cutting of finishes means dissatisfaction among the trade which can only result in an eventual loss of business that will be much more costly than the immediate loss of some profitless sales. Finishing material of good quality purchased for what it is

worth will bring the greatest return. A true fundamental basis of good goods for a fair price is the only way we shall get out of our present fog, because it is the basis for good business.

Highlighting Bronzes

On irregular surfaces—with high and low spots—pleasing effects may be obtained by the use of coats of different color, giving a highlighted effect. This is particularly effective on metal lamp stands.

The surface is first coated with bronze powder mixed with a good bronzing liquid medium, and applied all over. The usual amount to use varies with the shade, but on all excepting aluminum, good results can be secured with a mix of around 20-oz. to the gallon of liquid.

After this has thoroughly dried the old style japan colors reduced with turpentine are applied (also over the entire surface) and after they have set for a few minutes, but while still wet, they are wiped off with a soft cloth. This removes the japan color from the high places, bringing the bronze back to view, while in the depressions the japan color is left, harmonizing with the original bronze color. The operation is very simple, and excellent effects can be obtained providing care is used in the selection of harmonizing colors.—D. YOUNGS.

Hilo 1932 Sales Convention

A Hilo Industrial Sales Convention was held on Thursday and Friday, March 10 and 11, with J. H. Schumann, Chairman of the Board, presiding. New products were introduced by Everitt J. Cole, Industrial Sales Director, and discussed by chemists Mattiello, and Debes in their respective fields of Hilo syntol and colored enamel and lacquer finishes.

Pearl lacquer, which is a new and entirely different industrial finish, aroused great interest. It is expected that this finish will be widely used as a sales stimulator by manufacturers who are searching for the ultimate in novel finishes.

A Banquet was held at Brooklyn Elks Club, Wednesday evening, March 10. President Carl J. Schumann made the address of welcome. Chairman of the Board, J. H. Schumann, presented engraved silver pencils to those salesmen associated with Hilo 10 years or longer.

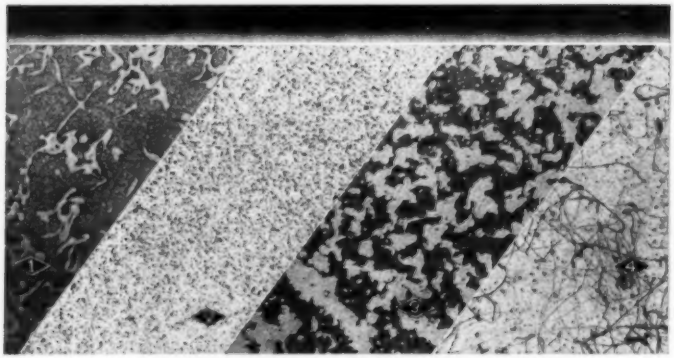


Fig. 1—Some examples of special decorative treatment.

Spraying Novel
Decorative Effects

*by WM. J. MISKELLA**

THE INTRODUCTION of textural and vari-colored finishes has widened the scope of industrial and decorative finishing. A modified texture can be obtained which is in perfect keeping with the demands imposed for a textural finish midway between the smooth and rough-textured effects.

One particularly fine point favorable to these special finishes is their variation—no two articles being finished exactly alike. There is a real sense of satisfaction felt by the manufacturer when he sees his product being finished with a pleasing finish mechanically applied with the spray gun, with no additional operations included in the labor of application.

Sometimes it requires special materials to secure various effects, and then again certain novel finishes may be obtained with the material which one has on hand. Enamels and lacquers of heavy consistency may be used to produce decorative effects. The thinner is omitted and the surface sprayed with the heavier or plastic material only here and there—sort of "hit and miss"—with the net result that less material is used than would be required to apply a coat of uniformly colored material.

This rough method of decorating originated from defects in application in the early stages of spray-gun development. At first

*Colorist and Finishing Consultant.

it was almost impossible to secure a smooth uniform coating of varnish or of any finishing material, with the spray gun, but after continued effort engineers were able to overcome pitting and streaking objections and secure a surface as smooth as glass. This pitting which formerly was so objectionable has since been developed to give us the effects shown in spattering and other interesting designs produced with plastic materials.

In the early days of the spraying the question of reduction of material was very important. Soon it became an established rule to reduce or thin the material 10% more than one would condition the material if it were to be applied with a brush.

This was due to the fact that in the atomization process in which both the finishing material and the reducer were a part, the mixture was atomized—broken up into thousands of atoms. This naturally produced a radiating surface of the finishing material atoms of far greater area than that representing the area of just the flat surface being coated. The extra 10% of thinner was added to compensate for the evaporation loss occasioned by such atomization.

Just the reverse takes place now. Materials which are looked upon as "decorative" are used without any reducer and in some cases they are even allowed to stand in the open in order to allow the solvent to evaporate so the materials will thicken. Basically then the operation consists of departing from the practice of producing a smooth uniform surface to the creation of an uneven rough one.

This is best illustrated by section No. 1 in the illustration (Fig. 1) at the beginning of this article; here we have a sprayed plastic application of a heavy material. It is too heavy in fact to be welcomed by the eyes of the painter who is accustomed to applying only finishing materials that are brushed. A variety of pleasing effects may be created by the spray process, which involves the use of a low air pressure for atomization and a high air pressure for forcing the finishing material out of the material container tank, or attached cup.

Colors in a great measure have overcome the awful monotony of "sameness." But colors have had their swing and manufacturers are looking for new methods and new materials which will aid them in selling their goods. Therefore it is in line with other practices of the time to consider the finishing of articles in such a way as to eliminate the commonplace. To do so the designer and manufacturers, as well as the finisher, must ever have in mind the environment wherein the said article is likely to be located. It is evident that a method of finishing which takes these points into consideration will be more effective.

Pressure Container for Material

In small shops where one desires to use the pressure cup a very simple means has been worked out. The air hose coming from the compressor is attached to the connection provided on top of the cup, while the small flexible-metal goose neck, shown in Fig. 2, is attached to the air intake of the spray gun. On the other hand the connection of the material to the cup is made with a swivel nut which is easily attachable to the material intake of the spray gun.

To make this attached cup per-

Fig. 2—Pressure cup attached to spray gun. Note portion broken away to reveal connection inside the cup.

fectly applicable to the new decorative method, spray-equipment engineers have, as a result of past experience with larger regulating devices, designed and had made up a miniature wrist-watch type regulator. This is also shown in Fig. 2, with its thumb screw to the right.

The larger tank, which may be had in any capacity from one gallon up to 200 gallons, if necessary, is provided with means for quick filling. There is a handle to facilitate moving and carrying the tank from place to place as also a pressure gauge to indicate how much air pressure is being applied to the material.

Another and more delicate spray finishing effect appears in section No. 2 of Fig. 1. When this is compared to that produced with plastic paint the wide variation which may be secured is observed. The finish shown in section No. 3 of Fig. 1 is an after treatment given to a plastic material that has been applied uniformly to a large area such as a wall. The high portions of it are laid down, while still wet, with the straight edge of a trowel.

Veiling; Spattering; Misting

There is on the market a novel decorating material known as "veiling compound." It is of a lacquer nature and has the peculiar property of cob-webbing. Either fine delicate lines or course heavy ones may be produced by a simple adjustment of the special spray gun used for the purpose. The "veiling" may be done over a plain black or a colored background, or over a spattered background which had previously been applied to a solid colored surface.

A combination of these effects is shown in section No. 4 of Fig. 1 which was made in three spraying operations with lacquer. First there was the solid which formed the background, next the spattering, and finally the "veiling" effect which, in this particular illustration, happens to be of a coarse pattern.

It is evident that we are coming into a new decorative period which differs radically from past practices due to its gradual diminishing or flowing appearance. By this new principle, or coloring effect, those engaged in the manufacture and finishing of articles—or those who are interested in the finishing of large stationary surfaces—may graduate or "flow" their colors and finishes in harmony with the design of the article of which they are a part, or the room which they are to decorate.

Much can be accomplished by spray gun specialty application such as veiling, spattering, mist-

ing and blending. But various other spray effects may be produced by varying the consistency of the material or the pressures used in the application, and also by hand texturing the material after the spray application. The hand effects are produced by working the material while still plastic with the hand itself, brushes, trowels, air pressure from the nozzle of the spray gun, etc.

Clouding or misting effects are more or less common in decorative work now and need little explanation aside from the fact that they may be applied with the spray gun accessories used to apply the other special finishes.

These accessories include such parts as the nozzle—that part of the spray gun which comes in contact with the finishing material—the interchangeable air

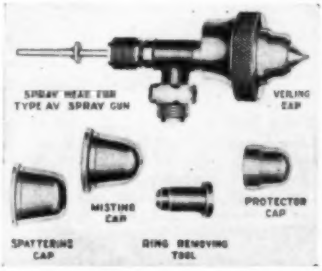


Fig. 3—Typical spray gun fittings used in connection with producing novel decorative effects by spraying.

caps which are supplied with the spray head and are designated as the veiling cap, spatter cap, misting cap, etc. The veiling cap is distinguished either by an obliquely slotted veiling ring located in the cap; the spatter cap has a large slotted spattering ring, etc.

A protector cap, which can be pressed over the nozzle end of the veiling, or other cap, protects the fluid tip and the needle from injury when the spray head is not in use.

Of course the regular spray gun head may be used to apply plastic paint and so with it and the accessories just described it is possible to have a complete equipment ready for almost any decorative emergency.

Porcelain Enameling Book

The Ferro Enamel Corp., of Cleveland, Ohio, announces the publication of a new text book entitled, "The Advanced Technique of Porcelain Enameling." This volume is edited by Mr. J. E. Hansen, Research Engineer for Ferro, and contains contributions by recognized authorities in the porcelain enamel industry.

Among the chapter headings of this 300 page text are the following, "Selection and Fabrication of the Base Metal for Enameling," "Enamel Mill Room Practice," "Mill Additions —Colors and Color Oxides," "Process Control Methods," and "Wage Incentives."

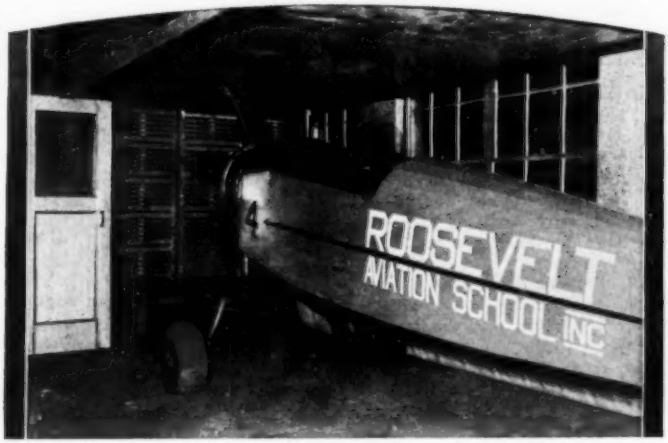
This book, which makes a really valuable handbook for anyone interested in the porcelain enamel industry, is sold through the Enamelist Publishing Co., of Cleveland, Ohio, and is priced at $3.50 per copy.

Given Patent on Finishing Method

Notice has been received by Horace L. Morton, Herkimer Hotel, Grand Rapids, Mich., that a patent has been allowed on his method of preparing and finishing wood products. The new method permits completion of a lacquer finishing job in one day.

With Mr. Morton's methods, filler is not used and the natural grain is preserved. Lacquer is applied within an hour after preliminary sanding, washing with an aqueous solution, tinting and application of a surfacer. A fine quality finish and a short finishing schedule are claimed as merits of his method which also is said to prevent cracking or crazing, blooming, turning white, shrinking and twisting, sweating, pinholes, wrinkling, crawling or blistering.

Mr. Morton has been identified with the paint and varnish trade many years.



Airplane Spray Booth

by ***L. F. BROWN***
Chief Engineer
Roosevelt Field, Inc.

Revealing details of a modern airplane spray booth which is fire resistant, adequate in size, conveniently accessible, well lighted, equipped with air-conditioning facilities and properly ventilated to meet very strict regulations.

THE OLD type of dope room is a thing of the past, as the application of coatings to the fabric of wings and fuselages of airplanes has now come under the jurisdiction of various regulatory authorities. Faced with this situation the Engineering Department of Roosevelt Field, Inc. set about to solve the problem of providing a thoroughly modern, satisfactory and economical dope room for the finishing of airplanes.

During the doping operation there is a certain fire hazard that attracts the attention of Fire Underwriters. As a result a code of rules has been drawn up which must be carefully observed. Further, in view of the fact that authorities have ruled that the fumes and vapor from spray guns are not beneficial to the human organism when inhaled, the New York State Department of Labor has formulated additional regulations regarding the conditions and methods employed in applying this spray coating. The principal ruling is in regard to ventilation; it specifically states that the worker

Illustration at top of page shows part of spray booth interior. The long narrow booth has heating coils at air-intake end and a suction fan at the opposite end. To shoot this picture the two sets of folding doors along one side were opened up, see part of a door section at left.

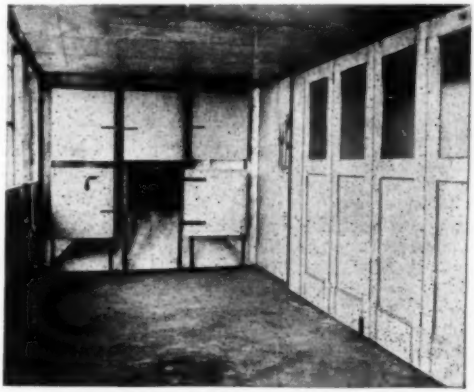
must operate the spray in a metal enclosure through which there is a flow of fresh air at the rate of 100-ft. per minute.

Dope, as it is familiarly known, has its idiosyncrasies. It is a warmth lover, and if the temperature is below its favorite zone, it will refuse to play the game. Also, if the air contains too much moisture or, as it is generally expressed, if the air is of relatively high humidity, the dope becomes greatly embarrassed, illustrating its unhappy state by a paroxysm of blushing which unfortunately holds as a permanent defect in the color. Under ordinary atmospheric conditions this moisture content can be regulated so as to avoid the blush by sufficiently warming the incoming air.

The difficulty usually experienced is that a room or spray booth having an opening sufficiently large to admit a large fuselage, and at the same time afford an air movement through said opening at the rate of 100-ft. per minute, presents a major problem in regard to the size of fan and motor necessary to bring this about. To take this quantity of air at outside temperature during cold weather and raise it to that of summer-time mildness presents a still greater problem.

A spray booth large enough to take an average fuselage or wing requires an opening about 30-ft. in length and 8-ft. in height, and to establish a velocity of 100-ft. per minute across this opening would, therefore, mean the moving of 24,000-cu.ft. of air per minute. As this spray-contaminated air is required to be discharged at a height above the roof of the building in which the spraying operation is located, the size of the piping and the motor horsepower needed, to say nothing of the heat units demanded, makes the cost of such a booth practically prohibitive. To try to properly ventilate and heat the usual dope room presents even a more elaborate and expensive arrangement.

Since all of the airplane parts to be treated—namely, fuselage, wing and tail surfaces—are long and narrow and since there is no prohibition as to the length



View of booth interior looking toward "fan-suction" end—showing hinged baffle plates, the middle plate now being in open position. Metal-clad folding doors appear at right; wire glass windows are at left; smooth metal ceiling above.

of travel of the air in motion in the booth, the simple and economical solution is to be found in a long narrow booth—taking in the air from one end through heated radiators and discharging it from the other end—with one whole side of the booth removable by means of an arrangement of folding doors. This allows the long narrow object, such as fuselage or wing, to be easily placed inside the booth, and when the doors are closed the movement of air is confined to the smallest possible dimension—representing an air movement of less than one-third of the large booth above mentioned as being too expensive.

The Roosevelt airplane dope room is quite large, being about 8x9x28-ft., one side being practically all wire glass windows; this side is opposite the opening which admits articles to be doped. A smooth metal ceiling is suspended over next to the windows at the proper height, thus forming the top of the booth. The windows and wall of the room form one side of the booth. Metal-clad folding doors in two sets are used for the other side.

Two banks of standard cast iron wall radiators are placed in one end of the booth in a compartment allowing the admission of fresh air from the outside. The other end of the booth is equipped with an exhaust fan and the usual removable baffle plates to preserve a uniform flow of air. A sheet metal shutter in the throat of the intake to the fan is controlled by a chain and fusible link and is so hung that in case of fire in the booth, the temperature will melt the fusible link, causing the shutter to drop at once, thus confining the flame to the booth itself. The fan is driven by two "V-belts" directly from a motor, and all parts are accessible by means of removable collars to allow for removal of dirt, inspection or oiling.

Although this booth was only recently completed, there has been opportunity for enough use to assure that the arrangement will satisfy all conditions and prove of great benefit in reconditioning the ships of the Roosevelt fleet.

In this booth one ship can be doped and sprayed in two days. Working eight hours a day, one upper and one lower wing can be clear doped with four coats. Two coats of color can be sprayed on and dried in three hours, while considerable time is saved by quicker drying of all dopes and paints when subjected to the even flow of heated air available in the room.—*Aviation Engineering.*

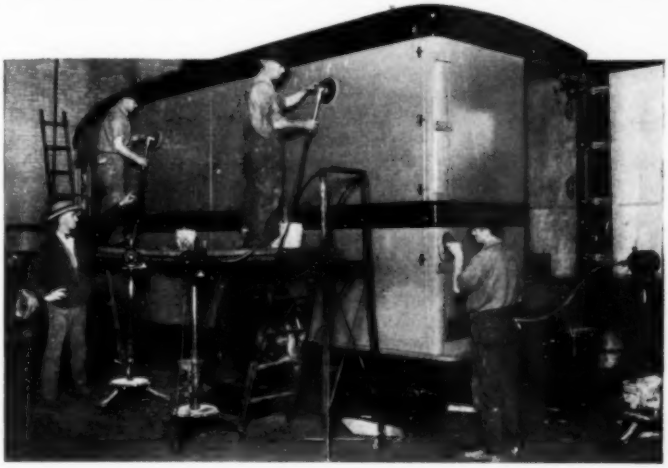
Asbestos Disc Filters

The Alsop Engineering Corp., 39 W. 60th St., New York City, announces an addition to their catalog of several pages describing the new "Hy-Speed" asbestos disc filters. Several of the many available models of these new disc filters are actually shown, in such a way as to picture completely their extreme simplicity, not only of operation but also of cleaning and assembling.

Considerable space is given to the asbestos discs used in these filters, discussing as well as their extraordinary efficiency, the arduous and prolonged research that was undertaken and carried through before they were perfected.

Everyone interested in filtration, is urged to send for a copy, which will be sent free of all cost. A complete catalog of the entire "Hy-Speed" line of liquid handling equipment, showing mixers, filters, bottle fillers, pumps, cream mixers, etc., will be sent if desired.

The Alsop Corporation has also completed the equipping of its testing laboratory, and invites its friends in the trade, to submit their liquid-handling problems, or to send in samples for exhaustive tests to determine the most efficient method of solving the difficulties.



Rubbing, Polishing and Buffing Mechanically—II

by P. C. BARDIN

FLEXIBLE shaft equipment assumes an important place in the group of portable rubbing and polishing machines. The popularity of this equipment is due to the fact that it is not only portable but it is flexible as well. The greatest advancement, perhaps, has been made in flexible shaft machines over all other classes and types of polishing and rubbing equipment.

These machines are available in units to be mounted on a bench, or mounted on a floor pedestal or suspended from the ceiling. The bench type is intended for work that can be easily and conveniently brought to the machine. The pedestal type is suitable for use on conveyors or production lines or, for exceptionally large, heavy or unwieldy work such as that illustrated above. The overhead suspended type is designed for use on conveyors or production lines, and where it is necessary or desirable to have a clear floor space.

The three kinds of units are divided into two distinct types—the countershaft type, and the direct drive. The countershaft type is

suitable for different classes of work and different sizes and kinds of wheels where several different rates of speed are necessary. This type of machine has a countershaft mounted on top of the motor. The countershaft is driven by a short belt from a pulley on the armature shaft. Different speeds are obtained by shifting the belt or by transposing the two pulleys. The difference in speed often represents the difference between what is commonly called good work and poor work.

The second type of machine is adequately described by its name—the direct drive. It contains no pulleys, belts or countershafts, the flexible shaft being directly connected to the armature shaft of the motor. Obviously the speed of the flexible shaft is the same as the speed of the motor, which is usually 1750 or 3500-r.p.m. This machine is adapted to continuous production service on one class of work, providing the speed is efficient for the particular work.

Two speeds, one slow and the other fast, are possible on the direct drive machine through the use of two right angle heads. This makes the direct drive machine adaptable to both polishing and buffing finished surfaces—polishing being done at the lower speed and buffing at the fast speed. Of course, it is necessary to use wheels of such a diameter that, at a given speed, satisfactory results will be produced.

Types of Wheels Used

It is important to use a suitable kind of wheel as well as the correct diameter (according to the particular speed used) for the different operations. Irrespective of its use, a homemade, makeshift wheel seldom works satisfactorily. To accomplish good results the wheel must be perfectly balanced, center bored and threaded so that when it is attached to the right angle head of the flexible shaft machine, it will rotate in a true circle.

One type of wheel that has proved effective in polishing finished surfaces consists of a perfectly balanced metal plate, bored and threaded to fit the right angle headpiece of the machine. A hard rubber disc, slightly larger in diameter is attached to the metal plate and a sponge rubber pad, equal in diameter to the hard rubber disc, is attached to that disc. A specially made circular cloth is fitted over the sponge rubber pad and fastened tightly to the wheel by means of a draw string (in the cloth) in the groove between the metal plate and the hard rubber disc.

Polishing compound, mixed a little heavier than cream, is poured on the cloth covered wheel and then applied to the finished surface. These wheels are available in several diameters, to accommodate different classes of work.

Buffing wheels, although similarly designed, have a felt pad for a base. The felt is not as resilient as the sponge rubber used in the polishing wheel, therefore it offers a more rigid base which is necessary for buffing. In this particular type of wheel, the metal plate, though different in design from the polishing wheel, is perfectly balanced and is bolted to the hard rubber disc. The felt pad is glued to the hard rubber disc and is sufficiently large in diameter so that it extends about 2-in. beyond the hard rubber disc. This 2-in. extension of the felt pad beyond the hard rubber disc produces the required flexibility or springiness at the edge of the

Solving ...

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ANOTHER plating problem has been solved by the Zapon laboratory staff.

Platers have sought a good insulating agent for racks and hooks in the chromium "bath."

And here is the answer. The new Zapon Stop-Off Enamel #1140 is a non-conductor, tough, tenacious, and highly resistant to acid solutions.

Send for a sample of this new enamel. It is designed for a specific task, and it fills the assignment perfectly.

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Consult with the Zapon laboratory staff on your lacquer problem. Our experience is yours for the asking. It may save you hundreds of dollars.

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Stamford **Connecticut**

wheel, so that in buffing over slightly raised mouldings or any slight inclinations of the surface, the finish will not be damaged.

A circular sheepskin cover is slipped over the felt pad and is held in place by a draw string. The sheepskin covered wheel is used dry to buff or polish the finished surface. A small quantity of ordinary cornstarch sprinkled on the sheepskin has been found to absorb from the polishing compound the grease picked up by the rotating buffing wheel.

Flexible shaft polishing and buffing equipment is powered by motors ranging from ⅛ to 1-h.p. Four speeds—875, 1300, 2350 and 3500-r.p.m.—are possible in the countershaft type machine. Speed controls in right angle heads for use on direct drive machines are made to fit individual requirements.

Thus far, these machines have been used almost exclusively in the metal working industry, principally in automobile production. However I see no reason why these machines could not be used on certain wood products, with the possible exception of those products having a natural finish.

Demonstrates Possibilities of Spray Gun Heads

Mr. F. R. Wells, director of the Interior Decorating and Research Laboratory of The DeVilbiss Co., Toledo, Ohio, is conducting practical demonstrations on all phases of interior painting and decorating effects in 16 cities throughout Illinois, Iowa, Missouri, Nebraska, Minnesota and Wisconsin.

These demonstrations are conducted free of charge in the cities visited. Mr. Wells shows the application of textured material by the spray process, and he makes these applications very interesting through the use of DeVilbiss portable interior painting and decorating equipment which he carries with him in a specially constructed truck.

Standard Varnish News

J. Heath Wood, president Standard Varnish Works, 386 Fourth Ave., New York City, makes the following announcements in line with the Company's program for expansion in the Industrial Sales Division.

At a recent meeting of the Directors, Clifford Sloan was elected vice-president in charge of sales, also president of the Standard Varnish Works of Michigan. Mr. Sloan joined the company slightly more than a year ago. He is the brother of Alfred P. Sloan, Jr., president of General Motors, and brings to the Standard Company a broad experience in sales organization and management.

Roy T. Riggs, formerly manager of the Royal Varnish Co., Toledo, Ohio, has been appointed Industrial Sales Manager with headquarters in New York.

George MacLeod, formerly with the Mountain Varnish Co., of Toledo has been added to the Industrial Sales Division, as has been H. R. Sills. Mr. MacLeod will represent Standard Varnish Works in Northern Ohio; Mr. Sills in the Philadelphia district.

Plans have been completed for manufacturing more extensively in the Detroit Plant at Bloom and Nevada Streets, so as to serve the company's business in that area, and B. P. Dawes, formerly of the Dawes Company, Detroit, is in charge. He has been elected vice-president of the Standard Varnish Works of Michigan. Charles Barber also, has been elected a vice-president.

A. E. Verbyla is in charge of the company's Linden, N. J., Lacquer Plant. Having been associated with some of the largest industries in the country, his most recent connection being the Meade Paper Co., in the Lacquer Coated Paper Division, Mr. Verbyla possesses a wide and varied knowledge of lacquers. He is a graduate of Cornell University.

Two others to join the Eastern Plant are C. M. Reeg, formerly with the Mountain Varnish Co., and Harold Bennett. Mr. Bennett will specialize in black baking japans. He was formerly associated with the K & S Company and the Thresher Varnish Co.

Additions to the Chicago organization are Charles Durham, until recently head of the Testing Department of the International Harvester Co., and prior to that assistant superintendent of the Heath & Milligan Co. and Wm. A. Karels, Mr. Karels was formerly connected with Ault & Wiborg and will supervise the manufacture of black bakings and rubber coatings.

New OPEX HI-GLOSS
Eliminates 5 Costly Operations

Sherwin-Williams Opex HI-GLOSS is a *new, better* and *more economical lacquer* finish for such surfaces as metal auto wheels, metal cabinets, washing machines, large or small wood surfaces, gasoline tanks and pumps, caskets, etc.

Heretofore, a satisfactory gloss finish on metal required a primer, at least two coats, rubbing down, finishing clear and often the baking oven. *Opex HI-GLOSS eliminates all of these operations.* Here is what it does:

1. COVERS SOLID IN ONE COAT, due to *high solid content* and high adhesive qualities, on clean wood or metal surfaces, reduced 50% for spraying.

2. WITHSTANDS SEVERE SERVICE AND ABRASION on wood or metal surfaces and does not become brittle upon aging.

3. GIVES HIGH GLOSS FINISH on wood or metal without polishing operation and without finishing clear, and it RETAINS its original lustre.

4. DRIES RAPIDLY and gives the durability of a lacquer; is resistant to gasoline, oil and alkali solutions.

5. PRINTPROOF — can be wrapped and shipped 6-8 hours after spraying.

The accompanying unretouched photograph of a BEE - VAC Washer shows the results HI-GLOSS gives in this type of finishing. Note the smooth, high gloss finish — obtained without a primer, without rubbing down, without finishing clear and without the baking oven.

Listen in on Sherwin-Williams daytime program "Keeping up with Daughter" over N.B.C. network - every Wednesday at 11 A. M., E. S. T. on Pacific Coast at 10:00 A. M. (P.S.T.)

S-W Opex HI-GLOSS is the most outstanding achievement in the industrial lacquer field of the past five years. It represents the combined efforts in lacquer research and synthetic resin development. It presents many manufacturers with the exact type of improved lacquer finish they have always wanted—but have heretofore been unable to obtain. Complete information concerning this new contribution to the industrial finishing field will be sent you without cost or obligation. Write us on your company letterhead. The Sherwin-Williams Co., Cleveland, Ohio.

SHERWIN-WILLIAMS

LACQUERS ENAMELS OPEX

INDUSTRIAL FINISHES

Painting and Finishing Railway Rolling Stock

by E. PERRY

IN CONTINUING this subject,* but particularly in regard to the housing of box-type freight cars, it is evident, from the statements of representatives of two large railroads, that the painting of these cars also should be done under cover, for at large expense they have provided adequate facilities for properly handling this work.

Mr. G. B. Blanchard of the Chesapeake & Ohio Railway Co., reported that before their new freight car shop was built they painted the cars in the open. During winter months they either could not paint at all, or the paint would not dry; whereas now, even on the coldest days, production can go on and the painted cars dry properly and are ready for the shipping track on schedule time. Also, in spraying out-of-doors on a windy day, during summer or winter, the loss of paint material was considerable and sometimes necessitated stopping of the work.

Their new shop is equipped with suction fans in the top of the building, and has ventilators in the skylights. During winter months the shop is heated with

hot air fans placed about every 20-ft. apart along both sides of the entire shop, by which an even temperature is procured, and production and good workmanship assured. They use the spray method almost entirely. The cars come from the repair shop and are set in the paint shop. There are five tracks in the paint shop, the entire length of the building.

Cars receive two coats of black or brown paint, and are stenciled on the third day. The system is to spray on one track while sten-

*Previous installments of this article appeared in Oct., Nov., and Jan. issues.

SPEED PRODUCTION WITH BERRYLAC

a remarkable new finish

Berrylac is a sensational development for all general industrial finishing purposes. It enables you to cut corners, reduce costs, speed production and actually improve the quality of your finish at the same time! It air dries like lacquer—or bakes in 30 minutes. No primer is used—and no rubbing or waxing required. One coat produces a beautiful finish—two coats a lustrous, china-smooth surface that is tougher than lacquer and remarkably resistant to chipping. Get the facts. Write for complete details. Take advantage of this important new development that actually revolutionizes industrial finishing.

BERRY BROTHERS

VARNISHES • ENAMELS • LACQUERS

DETROIT, MICHIGAN WALKERVILLE, ONTARIO

ciling the car which had been second-coated the day before, then the next day stencil on the other track. In this manner the cars remain on the same track until finished and ready for service.

Mr. L. B. Jensen, shop superintendent of the C. M. St. P. & P. R. R. Co., has rendered the following information about their new $1,000,000 plant at Milwaukee. He summarized the advantages of indoor painting of freight cars as follows:

It affords better working conditions and facilities, therefore production is not retarded.
It is more efficient and economical, because outside exposure causes more rapid deterioration of the materials to be applied.
Better drying conditions are obtained, not influenced by adverse weather conditions outside.
Paint coatings applied and dried under normally good conditions maintain a more durable finish.

About a year ago freight car repair work was started in the new $1,000,000 shop which is 1000-ft. long by almost 200-ft. wide. It is one of the largest and best equipped freight car shops in this country. To facilitate description, the following remarks will be confined to only two repair tracks because two tracks are considered and treated as being one unit.

Car Painting Schedule

The shop employs the production system or so-called station-to-station plan for repairing cars. The cars to be repaired enter the shop at the north doors and are moved forward at set intervals until they leave the shop, completely repaired, at the south exits. At each shop or station certain work is performed. The last two stations are assigned to painting and stenciling.

The schedule assigned an output of ten cars per day to the unit. This means that each of the two repair tracks had to turn out five cars daily. During an 8-hour working day each car remains at each station for a period of 96 minutes (8 hours divided by 5 cars). However, the movement on the two tracks alternates so that one of the tracks is moved forward every 48 minutes. A car ready for spraying is delivered to the painting station every 48 minutes, and receives two full coats—priming and finishing, both coats sprayed on.

When a car is moved to the painting station on track No. 1 the priming coat is immediately sprayed on, and the car is left to dry. Forty-eight minutes after the first car was spotted on track No. 1 the second car is moved onto track No. 2 of the painting station, and receives its priming coat. Then the first car on track No. 1 is given its second or final coat, and is then ready for movement to the last station where it will be stenciled.

The men who spray a car stand practically in one spot, one man on each side of the car, and spray the paint onto the ends and sides of the car while it creeps slowly forward. Then, to paint the car roof, the men stand on an elevated platform, and the car is pulled slowly backward.

They compute that for each coat it requires two sprayers seven minutes each to paint the sides and ends of a box car, and seven minutes each to paint the roof. The total actual man-hour time required to spray one coat on a car is therefore 28 minutes, or 56 minutes for two coats—the completed job. The sides and ends of the car are sprayed first, and the roof last. The time allowed for drying between coats is about 34 minutes—that is, the

HSC

All that a fine lacquer should be

plus increased film thickness!

You obtain a *deeper,* richer film with Murphy High Solid Content Lacquer—*without sacrificing any of the other qualities that a fine lacquer should possess.*

Rubs perfectly—Produces a hard, brilliant surface, with no more rubbing than any other good lacquer requires.

Durability—H.S.C. is decidedly more elastic and more durable than other lacquers designed to produce a heavy film.

High Transparency, with not the slightest sign of grayish cast or haze on the surface.

Fast Production—H.S.C. has the drying speed necessary to meet fast production schedules—whether they call for one or more coats a day.

H.S.C. is not an expensive lacquer—all the more reason why you will want to avail yourself of the finer finish it will give your product.

We will be glad to give you a demonstration, or more information, on request.

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H. S. C. (High Solid Content)

Lacquer

MURPHY VARNISH COMPANY
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Essex Varnish Company, Newark
(Associate Company) *Baking Material Specialists*

difference between 48 minutes and the 14 minutes required for the actual spraying.

The paint used is termed by the railroads as "4-hour coating" or "two-coats per day" paint. It is one of the many improved freight car paints now provided by the larger manufacturers who specialize in this class of material. Between seven and eight gallons are required to paint a car two coats, and the same material is generally used for both the priming and the finishing coat.

Stenciled Lettering

The cars are stenciled at the last station before they leave the shop. The stenciling work is usually done by hand in the ordinary way; however, a number of the railroads are spraying this very successfully. In spraying letters on freight cars the letters are well covered, making a solid white letter all tied up at the same time. Zinc stencils are recommended for this work, tying the letters together with wire and raising the ties enough from the letter so that spraying or stenciling under the tie will be no obstacle.

Spraying letters over riveted areas can be done satisfactorily by using masking tape in connection with the stencils, but in the main the master painter considers that there is no real economy in this method of lettering compared to hand penciling.

One of the best mixtures for stenciling and marking freight equipment is composed of 66% lead carbonate, 9% lead sulphate, and 25% of zinc oxide. Tests have proved that this mixture will not turn yellow from sulphurous gases, nor will it chalk off. Another good mixture for stenciling and marking freight cars is a good grade of white lead ground in linseed oil and containing about 15% of zinc oxide. The zinc retards chalking, and this mixture makes a durable letter. The railroads use raw linseed oil for thinning stencil colors.

Arrangement of Equipment

In this shop of the C. M. St. P. & P. R. R. Co., each track of the painting station is covered with a stationary canopy-type exhaust. The car to be sprayed is run under this canopy. Streams of air which flow closely to the sides of the car from floor slots, force all fumes and odors upward into the canopy where exhaust fans carry them away.

The painting station is not partitioned off from other sections of the shop. Each track has two sets of spraying outfits, one on each side of the track. The spray guns are 6-ft. long, so the use of scaffolds is unnecessary when the sides and ends of cars are being painted. The pressure-feed paint tanks are portable, and have a capacity of 12 gallons each. To facilitate the spraying of car roofs, a stationary elevated platform or walk extends clear across both tracks at the end of the canopies.

(To Be Continued)

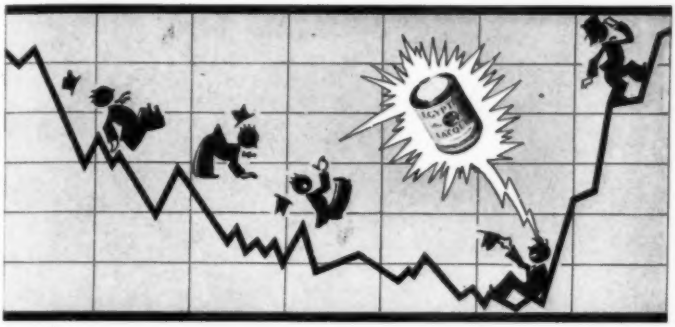
Denny, Hilborn & Rosenbach Elects New Officers

Denny, Hilborn & Rosenbach, Inc., 230 N. 12th St., Philadelphia, Pa., announces the election to office of Mr. Chadwick L. Rowe, president, and Mr. Frank R. Denny, secretary and treasurer.

Mr. Rowe has been associated with the company for 21 years as salesman, sales-manager and now as president. He is thoroughly acquainted with the industry, and is an authority on correct materials for all kinds and types of finishing. His ability is reflected in his swift rise from salesman to president.

Mr. Denny, the new secretary and treasurer, has been practically raised in the business.

Sometimes we're *glad* there's been a DEPRESSION



HONEST, we are! Here's why. Falling sales shake people up. They're willing to do things differently. They'll listen to new, sales-building ideas.

It's actually a great time to forge ahead. Some of our customers have been doing just that. Here's how:

By careful research they discover the need for new selling points in their product. They re-design. We are asked for new and more attractive finishes. A better product emerges. And it SELLS—*sells today!*

Of course business right now is not all it might be. But you should see the *small* orders pouring in here! They're samples, really . . . Experiments . . . Progress! There are good times ahead for those people who are working out better ways of finishing their products.

Are you going to get *your* share in the next period of prosperity? Will *you* be glad for the depression? Maybe we can help you to be. Call in the nearest Egyptian man and get his advice. No obligation, of course. It may turn the tide for *you.*

Egyptian "Lacquer" is listed in the following 'phone books:

Atlanta	Cincinnati	Kansas City	San Francisco
Boston	Cleveland	Los Angeles	Seattle
Buffalo	Dallas	Philadelphia	Spokane
Chicago	Detroit	Portland, Ore.	St. Louis

THE EGYPTIAN LACQUER MFG. CO.

90 West Street · New York City

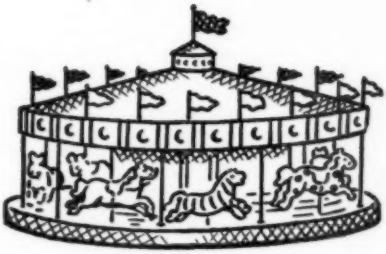
Refinishing Modern Hotel Furniture

by T. R. NALL

TO REFINISH hotel furniture effectively we must examine any damaged or marred places and find the reason for the damaged condition. Suppose we begin with the bedroom furniture. The walnut dresser has a plate glass top to protect the finish. Often times a guest overturns a glass of water, and some of this water runs under the glass top. Moisture between the glass and finished top may remain long enough to turn the finish white. Repeated accidents of this seemingly trivial nature may cause the wood veneer to become loose and show an ugly crack around the edges.

Dresser Tops and Fronts

The quickest and cheapest way to repair these dresser tops is to remove them to the hotel's refinishing department. First take a small knife and slip it along underneath the loosened veneer. Turn the knife blade so as to lift the loose veneer up sufficiently to slip in some hot animal glue, using a thin piece of veneer for dipping into and spreading the glue. Now, obtain a small piece



Around the Merry-Go-Round

WE WANT low prices. You want low prices. The dealer tells you he must have low prices. And his customers won't buy unless they see low prices.

In all this Low Price merry-go-round we are apt to forget there is such a word as quality. The factor that sometimes makes a higher priced material cost less in the end.

Du-Pros Strictly Pure Shellac has almost twice the solids content of other types of sealers. In plain words, this means that Du-Pros can be cut in half and still have as much body as ordinary sealers. No wonder it is the most popular sealer the furniture industry has ever known.

JAMES B. DAY & CO. CHICAGO

Du-Pros Pure Shellac

Finest Quality for 30 Years

of smooth flat wood a little larger than the width and length of the loose veneer. Place a piece of paper over the loosened veneer, lay the block carefully over it and then apply hand clamps. Leave the clamps on for about 3 hours. After removing clamps, use a clean rag or sponge moistened in warm water to clean off the surplus glue around the joint.

A popular hotel cannot be deprived of its guest room furniture any great length of time. In order to restore the finish on the above mentioned dresser as soon as possible, I suggest a skillful application of denatured alcohol over the entire dresser top. The white spots on the top will immediately disappear. The old varnish that has been checked or hair-lined will soften and run together, forming a new finish on the dresser top. Sometimes one or two more applications of alcohol are necessary before this result is obtained. Allow the surface to dry about 2 hours. Then sand with No. 5/0 sandpaper.

Apply one or two coats of shellac according to the condition of the dresser top, allowing about 2 hours drying time after each coat. Then rub down to a very smooth surface with No. 2/0 steel wool. Dust off and wax the top with a good grade of paste wax. Rub with a soft cloth to polish. This method makes the dresser top look like new and we find it is satisfactory in every way, including durability.

Sometimes hotel maids remove this protective glass top to wipe off the dresser top with a damp cloth, and do not dry it before replacing the glass. This also will cause the same condition as mentioned above.

Some relief from this trouble can be obtained by placing or gluing a small thin piece of felt at each of the four corners of the glass top, these pieces of felt raising the plate glass just high enough to permit a circulation of air between the glass and the dresser top.

Sometimes the hotel guest spills something stronger than water on the front of the dresser, leaving white spots which may be removed by rubbing it briskly with a rag moistened in denatured alcohol, to which has been added just a little paraffin oil.

This refinishing job is performed in only 7 hours. The furniture is then restored to the room in first class condition. The desk and night table may be treated in the same way.

Beds, Chairs, Toilet Seats

The beds are moved about so often by the maids that (in the case of wooden beds) some of the pressed metal sockets, into which the casters fit, wear out. This, not being noticed at once, leaves the casters to work on the bare wood, sometimes causing the bed legs to split. The effective way to repair this is to get the proper size brass shoe (or ferrule) to fit over the lower end of the bed leg. Then put in a new socket and replace the caster. There is no danger of the bed leg ever splitting again.

Upholstered bedroom chairs are usually dry cleaned twice annually. In one particular hotel I have in mind a special dry-cleaning fluid is prepared and used by the "upholstery and drapery man," who learned his trade in Italy. This is made according to his own formula, and he will not give out any information about its ingredients.

Toilet seats should be waxed frequently with a good paste wax

Our Adaptation of The Newcomb Syphon Ventilated Cabinet For Use on Outside of Buildings

(Patented)

Particularly desirable where finishing-rooms are located on top floor, when stack is eliminated and weather-top only is used.

This installation for the outside placing does not alter the Newcomb principle of construction, but does release **over 100** sq. ft. of finishing-room space for each cabinet and eliminates all fire risk in the finishing-room from spray cabinets.

Let Us Tell You About This Installation

Grand Rapids Blow Pipe and Dust Arrester Company

Dust Collecting Systems 527 Monroe Ave. Grand Rapids, Michigan

Do your complaints m

RUST—a smoldering fire line—is the breakdown of many fine-looking lacquer and enamel jobs; the cause of numerous complaints that indirectly affect the manufacturer. ¶ Between the metal surface and the finish is a ***danger-line*** that mere primers can't adequately protect. Microscopic rust starts a disintegration that ultimately breaks down the finish surface ***unless you stop that rust-line.*** ¶ Beware of the rust-line and use R. I. (rust inhibitive) Chromated Primer for the priming coat on ***all*** your metal finishing. ¶ R. I. Chromated Primer is a definitely proved rust-preventive primer. It ends priming problems and rust problems in one operation. Entirely different from any product now offered to the metal finishing industry, it combines for the first time

Ends priming problems a rust

...ts ...ndicate a RUST line?

the best features of a high-grade primer plus the important essential of dependable rust resistance, secured in a single dip or spray application. ¶ R. I. (rust inhibitive) Chromated Primer clear or pigmented can be used for all your priming . . . with little or no sanding required . . . under lacquer or enamel . . . baked anywhere from 30 minutes at 350 degrees to 3 hours at 180 degrees. No other primer has this wide range of utility! Present users include manufacturers of every kind of metal product. ¶ Send for the facts on this danger-line protection. Address The Standard Varnish Works, New York, Chicago, or Detroit.

R. I. (rust inhibitive) Chromated Primer is the product of wide technical experience and thoroughly modern facilities. It is one of a complete line of industrial finishes including varnishes, paints, enamels, lacquers and allied specialties. Highly competent Standard service men are at your call from industrial centers throughout the country, and four laboratories and a well-organized research department are equipped to help you cut the costs and better the quality of your finishing.

...lems a... rust problems in one operation

to prevent the water from coming in contact with the finish. When any of the seats require refinishing, the varnish must be removed and the surface must be carefully smoothed; then apply two good coats of waterproof varnish, or any good spar varnish.

Ballroom Chairs

Upon entering the ballroom let us first consider the chairs which are finished in gold and upholstered in red velour. These red seats are cleaned and rebuilt twice annually by the upholstering man. They are refinished once a year with a bright gold mixed in a good grade of clear lacquer. This is sprayed on. The porters or housemen should be warned against stacking chairs when removing and replacing them.

Dining Chairs and Table

In the main dining room, the chairs are solid walnut finished dark—with a cane back finished in harmony with the rest of the chair. The seats are upholstered in green jacquard mohair and are cleaned and rebuilt twice annually in the same manner as the ballroom chairs. These chairs are refinished once a year by giving them a benzine bath to remove any grease and dirt which may be on them. The edges and any worn places are then touched up with a dark alcohol touch-up stain.

By constant rubbing of the backs, the finish eventually wears off the cane. This cane can be retouched with colored shellac to harmonize with the remainder of the chair. Then the chair can be given one coat of gloss or flat lacquer—whichever is desired.

The constant moving of the chairs to and from the tables naturally scars the table legs more or less. The dents can be filled and leveled off with "plastic wood" which is generally used the same as oil putty. This material gets as hard as the wood and will not chip off. Any worn places in the finish of these tables can be taken care of in the same manner as the chairs.

Polishing and Waxing

A good polish for the maids to use on the hotel furniture is made up as follows:

Rubbing oil (paraffin)	3½-gal.
Turpentine	1-gal.
Lemon oil	3-oz.
Alcohol	1-qt.

Shake well as each ingredient is added; also, be sure to shake well before using it on the furniture. Apply with a soft cloth and use another cloth to polish up. Be sure that no surplus polish is left on the furniture.

When the glass tops are removed to polish the dresser tops, use a good paste wax instead of polish on the tops, as this makes them waterproof.

Our coffee shop tables and chairs are finished in silver gray oak trimmed in red, with dark red leather seats. This furniture is repeatedly given an application of a good paste wax.

A. G. Blok Represents Jas. B. Day & Co. in Michigan

A. G. Blok has been appointed to represent James B. Day & Co., of Chicago, Ill. manufacturers of finishing materials. He will have the Michigan territory.

Ralph Fink Joins Ferro Enamel

Mr. Ralph Fink has joined the laboratory force of the Ferro Enamel Corp., Cleveland, Ohio. Mr. Fink is a graduate of Ohio State University, having received an A. B. in Chemistry there. He also studied in Cleveland College, majoring in Metallurgy of Iron and Steel. He was formerly with the American Stove Co. of Cleveland.

TURN DOWN THE FIRE . .

Rezyl-type enamels bake at lower temperatures . . . . . .

Cut oven temperature to 200° F. Give parts a 1-hour bake. This practice is regularly recommended for enamels formulated with Rezyls.

Rezyl-type enamels are tough and elastic. Their adhesion is excellent. Their high gloss is durable. While 1-hour at 200° is the minimum recommended, the longer Rezyl-type enamels are allowed to dry in the air, or bake at low temperatures, the greater the adhesion and elasticity of the film.

Rezyls are opaque to destructive short rays of sunlight and impart this property to finishes in which they are used. This exposure resistance of Rezyl-type finishes makes them of utmost importance to anyone using finishes.

For wood, metal, fabric, paper or leather.

FREE—*An Important Booklet* containing test data and basic formulas on Rezyls. When writing, mention name of your supplier.

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Send the booklet, "Rezyls" and other information on
☐ Air Drying Finishes ☐ Baking Enamels ☐ Lacquers for use on:
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☐ Industrial ☐ Automotive ☐ Pigmented ☐ Metal

Name _____

Address _____

For attention of _____

Questions and Answers

Lacquered Aluminum Ware

Can you tell us how to prepare aluminum ware for the application of enamel through the medium of a spray gun—that is, is there any solution that we might wash the aluminum with that would assist in the adherence of the enamel?

We are troubled with the enamel chipping off, although we use the best grade of enamel recommended by a manufacturer for this purpose. We clean the articles with thinner before application of the lacquer, but this does not entirely prevent the enamel from chipping. On other makes of lacquered aluminum we have examined, the enamel, in our opinion, adheres much more satisfactorily than does ours. We would greatly appreciate your suggestions in this manner.—D. S.

There are several methods of cleaning aluminum before painting. One system in quite common use is to dip the aluminum into a weak alkali solution for a short period of time. The alkali slightly etches the surface of the aluminum and at the same time removes any trace of grease and oil. The alkali bath is then washed off thoroughly with clean water and the moisture is dried off the work before the finishing coats are put on. The satisfactory adhesion of lacquer to aluminum depends upon something more than just merely a well cleaned surface. The lacquer should be properly formulated for aluminum in order to get the best results. There are lacquers on the market that stick very tightly to aluminum.—M. J. P.

Regarding the preparation of aluminum ware prior to the application of lacquer enamel, I suggest D. S. try cleaning the aluminum before finishing, using one of the specially prepared chemical cleaners for aluminum surfaces.

Wood Refinishing Problem

I have been experiencing trouble in the refinishing of wood. I use a varnish remover to remove the old finish, but it seems that no matter how well I clean the wood after using varnish remover, the lacquered surface dries tacky and has white patches. This trouble occurs even though I use shellac as an undercoat before the lacquer is applied. I believe this trouble is due to wax in the remover, and I am wondering if you

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A unique finish can add to your product that magnetic urge to buy which results in greater sales.

Customers' reactions to a product are often registered as good, bad, or indifferent by one lone factor--the finish.

Finish is important – vitally so. To reduce sales resistance and to stimulate sales appeal, the finish must be original, timely, and beautiful. It need not necessarily be expensive.

Our studio can produce a fitting finish for your product – and this creative work is free to manufacturers. No obligation whatever. Send us a sample piece to work on.

ROCKFORD VARNISH CO.

ROCKFORD, ILLINOIS

could suggest a remover that contains no wax.—D. N.

I operate a refinishing shop, and I am relating here an experience or two I have had in which practically the same trouble you mention occurred to the refinished surface.

Sometime ago I had some old enameled chairs to refinish. I cleaned them in the usual way with varnish remover, washing with turpentine and sanding when dry. After this I applied a flat undercoat, which dried all right, or at least it seemed to. Then I put on a coat of 2-hour enamel; after 24 hours drying this was tacky in spots. I couldn't place the blame.

In mixing my color it was necessary to use some oil tinter to produce the shade I wanted. In tinting this material you are only supposed to use an ounce of color to a gallon of material. I thought perhaps this was the source of my trouble. Well, I tried my color on another piece of wood. It dried all right. Then, I traced the difficulty to the varnish remover which, of course, contained wax.

There is something, I thought, that draws the wax through. Having discovered this, I gave my articles a wash of turpentine, sanded again, and then applied a wash coat of shellac and re-enameled. This dried okay and in proper time.

Sometime later I had a table top to refinish in a hard finish. I cleaned the old finish off, washed and sanded. I let it dry over night and varnished after 24 hours. The surface dried tacky. Again I experimented and traced the trouble to wax from the varnish remover. I recleaned the table top, washed, sanded and gave it a wash coat of shellac, which I had neglected before, as it was a cheap, hurry-up job. In each case I was using a 2-hour material, but the second time the finish dried in the usual 2-hours.

I believe that in your case if you will wash your surface with turpentine, sand, and then apply the shellac your trouble will be eliminated. At any rate, don't let up on your cleaning when refinishing, no matter what kind of material you are using as this always leads to trouble in the end. —J. K. Cooper.

Oak Filler Trouble

We are experiencing trouble in filling oak veneer, and would appreciate any suggestions you care to make. Our trouble is that two oak desk panels of the same veneer will not come out the same color after being filled; that is, one panel will be lighter than the other, even though the application of filler on both panels is identical.—T.L.C.

We are inclined to believe that the off-color condition after filling oak veneer is caused by some slight differences in the texture or kind of oak veneer you are using. We are wondering if it is possible that some of your veneer panels are from one manufacturer, while others are from another; or whether possibly some of the oak panels contain more sap wood than others, or whether the application of filler or stain filler is left longer on some panels than on others?

There is an acid condition in oak that often reacts after filler or stain is applied, and this can cause variations in color, since there are differences in the oak veneer—for example, differences

BERCO No. 401 Wood Lacquer Enamel Covers Completely with One Coat

BERCO Wood Lacquer Enamel covers completely with one coat. Yet it reduces one to one for spraying and two to one for dipping. It gives you more coverage per gallon than most Wood Lacquer Enamels.

Sprayed or dipped, BERCO Wood Lacquer Enamel produces a high gloss finish that stands up for an unusually long time even on products like Nursery Furniture, Kitchen Equipment, Toys, Wood Novelties, etc.

BERCO Wood Lacquer Enamel comes in popular tints and in our special Snow White color, a pure white which is whiter by comparison with others.

Order five gallons on approval or ask for a free trial sample. Use it according to directions. Check the reduction carefully. See how cleanly it sprays. If for dipping, notice that it flows freely and drips clean. Examine the finish to see how well it hides. Compare the high gloss finish with previous jobs.

Write today to NORTH BERGEN VARNISH CORPORATION, 989 39th Street, North Bergen, New Jersey. Representatives in New York, Chicago, Rochester, Philadelphia, Pittsburgh, and Baltimore. Warehouses at North Bergen, New Jersey, and Chicago, Illinois.

Hollywood Combination Sand Box and Play Yard

in the kind or character of oak, or in the thickness of veneer, or in the kind of glue used under the veneer.

We are also wondering if you glue up your own veneered panels or if you obtain your ply panels from a panel manufacturer. If you could be sure that the panels to be used on the same desk were made from veneer of the same sheet or flitch, we feel certain that there would be no off-color trouble.

Of course, practically every manufacturer of furniture has from time to time some off-color problem such as you mention, even on wood other than oak. When troubles of this kind occur, it is usually left for the experienced, skillful finisher to do some "toning" or something of the kind to make the color of adjoining parts uniform.—I. F.

In regard to filling oak veneers, I could go into detail and call to mind many different reasons that may be causing this firm's trouble, but I would have to be on the job to get to the point. However, there are, I believe, about 300 different species of oak in the world, about 50 of which are in the United States. In view of this fact, then, even though a factory ordered or specified one certain kind of oak veneer, it would be hard to distinguish one from another since so many kinds of oak veneer look alike before being finished.

This difference in oak is not noticed until the stain is applied on the cabinet work. All oaks, as you know, have tanic acid in them —one specie of oak veneer perhaps has more than another—and this tanic acid counteracts stain.

In my opinion the best method to finish oak is to apply the stain first, using either oil or water stain. Be sure the stain is thoroughly dry; then apply the filler. I have always found it necessary to apply the filler thicker on oak than on other woods, since oak has a larger grain. After the filling operation, the oak veneer should be toned up to match. The toning up can be done either by hand or spray gun; I use a spray gun.—T. R. NALL.

Fire Door Finishing

I read with interest in March issue of INDUSTRIAL FINISHING (page 36) a question by T. C. T. T. Mfg. Co. on how to fill dents in the surfaces of hollow metal doors, and Mr. Fred Mannhardt's answer. Mr. Mannhardt is right in saying that instead of "putting on," you should "take off." The trouble with a good many of these manufacturers is that they try to finish or paint the doors before the product is ready for the paint shop.

I have had 10 years' experience in finishing and graining hollow metal doors, and my advice to this inquirer is to first wash off the grease and rust. For the heavy rust spots I suggest a specially prepared metal cleaner.* When the surface is thoroughly free of grease and rust, spray on a thin coat of clear metal primer,* and bake 2½ hours at 200° F.

Next apply one coat of good metal door filler,* and bake for 3 hours at 250° F. Use a 7-in. knife to apply this filler; if the dents and seams are very deep a second coat of filler will be necessary. Bake again at the same temperature. Then sand the doors on a belt sander or with a rubbing (portable sanding) machine,* using No. 60 waterproof sandpaper.

---

*Manufacturer's name and name of materials recommended by the author will be furnished on request.

Can you afford to shrug your shoulders at HUMIDITY?

● Moisture-laden days have a forceful way of evaluating lacquer quality. Moisture-blush, so frequently encountered when inferior solvents are used in the lacquer, means impeded production schedules bound to result in increased finishing cost.

● Butanol provides lacquer with an effective safeguard against moisture-blush. Its high boiling point retards evaporation and it absorbs such traces of moisture, as might be precipitated on the film, without endangering its proper drying. As a *safeguard against moisture-blush,* it will pay you to specify "formulated with Butanol."

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BUTANOL
"It spells Lacquer Safety"

This schedule prepares an excellent foundation for an air-drying enamel, baking enamel, or lacquer finish that will stand considerable abuse.

It is impossible to put a heavy coat of filler on bare metal and make it stay there. Lacquer fillers may serve the purpose on small work, but not on hollow metal doors.—ARMIN FURRER.

In finishing steel doors and sheet metal a number of things must be taken into consideration, especially when these doors are to come in contact with intense heat or outside exposure. The appearance and durability of the finish depends largely upon the materials used to finish them.

To obtain a satisfactory smooth finish on sheet iron or steel, first remove all welder's beads, and all roughness on the seams left by the welders. To remove this roughness use a portable grinder (the hand type) until all beads and roughness are ground down, leaving a smooth surface. If there are many traces of scale, which is usually found on most sheet iron or steel, it will be necessary to sandblast the entire object so that the scale will be removed. This prepares the surface for the paint shop.

A good foundation is essential for a lasting finish. I suggest using a good long-oil oxide primer, and allow it to dry for 48 hours at a temperature of about 190° F. When the primer is thoroughly dry, fill all pits, scratches and seams with a good metal filler. Allow filler to dry 24 hours at room temperature. Then wet sand the entire article, using water and No. 240 wet-or-dry sandpaper. After the surface is completely dried, apply two or three coats of good heat-resisting 4-hour enamel, allowing approximately 8 hours drying time between coats. This will produce a sound, flexible finish in a semi-gloss, and will give the appearance of a lacquer finish. If a very smooth finish is demanded, it will be necessary to rub the article with rottenstone and sweet oil.

If this schedule is followed, I am sure that the result will meet with your approval.—GEO. HEIDENREICH, JR.

British Plastics Year Book

The "British Plastics Year Book, 1932," recently published and released by Plastics Press, Ltd., 19/23 Ludgate Hill, London, E.C.4, England, deals exclusively with plastic materials and their products. The editorial contents of this book contains some very interesting and informative data regarding such materials as synthetic resins, cellulose acetate, shellac, gilsonite, plastics for wood mouldings, etc.

The book has 364 pages, 6¼x9¼-in. in size. These 364 pages are only about three-quarters of the book; the fourth quarter contains memorandum pages and a diary for 1932. The entire book is well bound in regular book form with a stiff cover.

Changes in Du Pont Co.

After a business connection of more than 25 years with his company, Dr. Hector R. Carveth, president of the Roessler & Hasslacher Chemical Co., presented his resignation as president and a member of the board to his board of directors on March 28. At the same time, he informed the board of his resignation as a director of E. I. du Pont de Nemours & Co., of which the Roessler & Hasslacher Co., is a wholly owned subsidiary. Since it had been known for some time that for personal reasons Dr. Carveth wished to withdraw from all active business connections for the immediate future, the board met his wishes and accepted his resignation, effective immediately.

Charles K. Davis, president of the Du Pont Viscoloid Co., another wholly owned subsidiary of the Du Pont Co., was elected to succeed Dr. Carveth as director and president of the Roessler & Hasslacher Chemical Co.

Arnold E. Pitcher, vice president of the Du Pont Viscoloid Co., will succeed Mr. Davis as president of that organization.

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WATEROIL STAIN

Because it is fast to light. Does not bleed or fade, will not raise the grain. Covers more area per gallon. Produces a TRUE WATER COLOR.

 # 1900 WATER OIL RUBBING OIL eliminates entirely the bluish bloom or haze. No finger marking or oily surface.

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Quick Drying Fillers, Lacquer Shading Stains, Finishing Waxes, Lacquers, Sealers, Drawer Coaters, etc.

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Two New Colors

4911 Vermont Maple — 4896 Aspen Wood Acid Stain Powders

Produces almost exactly the antique color and tone of antique satin maple, found only in the original aged Vermont Antique Maple Pieces.

A beautiful clear amber brown, harmonizing splendidly with walnut and other contrasting colors. Used on overlays and drawer fronts.

The newest shades for modern designs
Write for trial samples today

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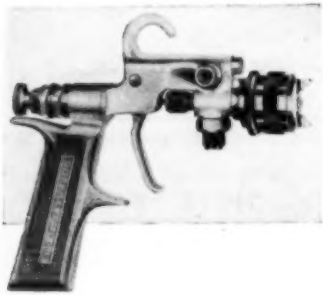
New Materials and Equipment

New Spray Gun Heads for Synthetic Finishes

Two new spray heads for DeVilbiss spray guns have recently been announced by the DeVilbiss Co., Toledo, Ohio. These spray heads were designed especially for use with the new synthetic lacquers, enamels and similar finishing materials; they will produce the finest type of finish. One is for use with suction material feed, the other for use with pressure feed. Either head operates with the DeVilbiss Type AV spray gun.



These spray heads make it unnecessary for users of DeVilbiss spray guns to buy a complete spray gun to handle the new synthetic enamels.

The suction feed spray head can be used with ordinary lacquers as well as with the new synthetic materials. According to the manufacturer a finer, faster and more uniform spray is obtainable with these materials than has heretofore been possible.

The pressure-feed spray head is not suitable for use with ordinary lacquers or similar light materials, but is designed solely for the new synthetic enamels.

Rust-proof Metal Primer

The Standard Varnish Works, 386 Fourth Ave., New York City, announces a new rust-inhibitive or rust-proof metal primer known as R. I. (rust-inhibitive) Chromated Primer. This new primer has been formulated for use on all metal products that are to receive a finishing coat. It has already proved its worth to numerous industries such as automobiles, metal furniture, steel cabinets, lockers, metal refrigerators, scales, stoves, toys, and a great variety of other articles where metal is used and non-rusting is of paramount importance.

R. I. Chromated Primer inhibits rust to an extent not heretofore believed possible. In addition to its rust-proofing qualities, when applied over rust, it stops further corrosion; if through accident a portion of the surface primed is abrased so that the metal is exposed, rust will not creep or

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Binks No. 47 Material Pressure Regulator

A MATERIAL

Pressure Regulator

that really WORKS!

The problem of close regulation of material pressures to the spray gun on installations where the material is fed to several guns on the same or different floors from a single container, finally has been solved.

The new Binks No. 47 Material Pressure Regulator does the job in a way that leaves nothing to be desired. Consider how it would simplify your spray production problem to be able to hold the material pressure at the spray gun to within ¼ pound of the proper point—regardless of the pressure in tank or lines—regardless of spraying speed. That's just what the No. 47 will do. You set it where you want it and the pressure stays right there.

Write for full information and prices—also new general catalog.

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extend itself to the metal that is not so exposed.

R. I. Chromated Primer is a combination of the best features of a high-grade metal primer plus the important essential of dependable rust resistance. Its application is like any other primer. It is supplied in clear liquid for dipping, or pigmented to any shade for spray or dip application. It has a baking range of 30 minutes at 350°F. to three hours at 180°F. Lacquer, synthetic enamel or oil enamels can be applied as a finishing coat.

A unique feature of R. I. (rust-inhibitive) Chromated Primer is its imparting of toughness and elasticity to the finishing coats. This is particularly true of lacquer and synthetic enamel. Also, it has in itself extreme durability and proof against weather; therefore, any metal article can be coated and stored for an indefinite period or shipped in the prime coat for future finishing with full protection to the metal.

Alkali Resisting Finish

The Steelcote Manufacturing Co., of St. Louis, Mo., announces an alkali-resisting spray finish for washing machine tubs and kindred products. This product is applied as a lacquer, using a spray gun only. It has the adhesion of an enamel and resists alkaline conditions perfectly. Regarding the merits of this product, the company says:

"Our chemists formulated this product only after making complete and exhaustive tests. One of the tests conducted was to make a solution of washing soda, using 1-lb. of washing soda to 1-gallon of water. Into this solution we submerged several panels sprayed with our coating. These panels were submerged continuously for 30 days, after which time they were inspected under a microscope and we found the coating to be intact. During the period of the tests there was a certain amount of evaporation which left a salt deposit on the panels, caused by the soda solution. After removing this deposit, the coating was still intact.

"We also conducted a test by dissolving one ordinary cake of laundry soap in a gallon of water into which solution we also submerged several panels, with the result that the coating or film was not destroyed."

Cleans Silk Screens

The Solfo Chemical Co., of Trenton, N. J., announces "Solfo Solvent"—a transparent, harmless solvent for removing paint, lacquer, shellac and adhesive tape from silk screens used in silk-screen stencil process work. When the impressions have been made, the screen can be cleaned out for a new job with Solfo solvent (about half an hour's work).

One gallon of this solvent cleans five yards of silk. It is harmless, being non-injurious to the finest silk, or anyone using it. Solfo solvent makes silk screen stencil work more practical and economical, since it enables the same silk screens to be used many times.

Announcing Celowax

A novel wax has just been introduced which differs from other waxes in that there is a wide spread between its softening and melting points—for example, one grade has a softening point of 140°F. and a melting point of

Better ▲▲▲

TECHNIQUE *and* FASTER PRODUCTION

JONFLEX

Precision-Edge Masking Tape

Once a craftsman uses this tape, his art improves, his production increases, and his temper stays put.

Jonflex Precision-Edge Masking Tape leaves a clean, accurate edge when removed. It is impervious to lacquers and solvents, and it flexes to any intricate pattern. There is no annoying fuzz or selvage to mar the finish.

Send for a free sample and understand the enthusiasm of the men who use Jonflex.

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Is made by our own patented processes

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Prompt deliveries on any quantity

Sensational
New SILVER Finish

PURITAN SILVER PASTE

For Casket, HARDWARE, TOY and METAL INDUSTRIES. Extreme fineness, brilliancy--can be used with varnish, liquids or lacquers, for spraying, dipping or brushing. Entire new principal of manufacture.

Comes in several shades of silver. We can match any shade--send us your sample. If you are looking for a smooth NEW FINISH write us for samples.

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•SILVER, ALUMINUM and BRONZE POWDER FINISHES in over 100 colors. •Varnish Bronzing Liquids. •Clear Bronzing Lacquers

186°F. When melted this wax is gelatinous in nature, and because of this high viscosity when molten it does not run or drip as readily as other waxes. Chemically it is a treated straight chain hydrocarbon which does not saponify or emulsify. It is of a light yellow to white color and more soluble in hydrocarbons and chlorinated solvents than other waxes. In spite of its high melting points, it is plastic and has a good tensile strength. It is being marketed under the name of Celowax by the Glyco Products Co., of Bush Terminal, Brooklyn, N. Y.

Celowax is particularly suited for polishes, lubricants and waterproofing.

A New Protected Metal

According to a recent research report by Dr. A. W. Coffman, a new protected metal called "Robertson-Bonded Metal" (R-B-M) has been carried through the laboratory stages of development at Mellon Institute of Industrial Research.*

Robertson-Bonded Metal is the result of extensive research that has led to the production of a laminated metal-felt material in which felted materials are cemented to steel with heat and pressure, utilizing metals as adhesives. The composite laminated material, the outer surfaces of which are suitable felts, is then saturated with any desired saturant chosen with reference to the corrosive condition to which the metal is to be exposed in service.

Paint, lacquer and resin films superimposed on the saturated felt not only give added protection but also desired attractiveness of appearance in the finished product. Owing to the fact that it is

possible to choose between a number of felts and felt saturants to stand against various corrosive conditions, this new protected metal promises flexibility in providing corrosion resistance.

*Copies of this report, giving complete information concerning this new material, may be obtained by applying to Mellon Institute, Pittsburgh, Pa.

A REFRIGERATOR finishing system is announced that "offers a triumphant resistance to humidity, abrasion, discoloration, butter fat, chipping and all other elements of destruction."

Berry Brothers' News

John C. Witherspoon, for many years a director of Berry Brothers, Detroit, Mich., (for 74 years prominent manufacturers of paints, varnishes and lacquers) has been elected president of the organization, succeeding W. R. Carnegie, who retires after more than 35 years active service. Mr. Carnegie has been treasurer of Berry Brothers 25 years and president and general manager 10 years.

Thurlow J. Campbell, newly elected vice-president and general manager, comes to Detroit from New York City where since 1917 he has been successively sales representative, New York branch manager and superintendent of eastern branches.

Information regarding action taken during the meeting of the board of directors is released by C. L. Forgey who has been in charge of Berry Brothers advertising 18 years and who is now general sales manager as well as holding the advertising portfolio. The board of directors, in addition to the officers of the company named, includes H. L. Stanton, chairman, Frederick L. Colby, Jr., Thomas B. Colby, George H. Klein and Joseph B. Sherrard.

North Bergen Varnish Appoints Western Sales Manager

North Bergen Varnish Corp., North Bergen, N. J., announces the appointment of Mr. Ben H. Focht as Western Sales Manager with headquarters at Chicago. Chicago offices and warehouse are now located at 1500 S. Western Ave.; telephone Canal 6816. Complete stocks of the various Berco finishing products will be carried. Associated with Mr. Focht are Mr. J. E. Martin and Mr. E. L. Bracklow.

Hy-Speed

EXPLOSION-PROOF ELECTRIC MIXERS

Clamp to *any* tank and mix *all* liquids

MIX QUICKER

COST LESS

LAST LONGER

ALSOP ENGINEERING CO.

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Here's The Thinner to Use

For Dipping Spraying or Brushing

WORKS equally well with Paint, Varnish, or Enamel. Its high solvency prevents separating, jelling or thickening. Because of its adaptability, you need carry only one thinner in stock. Sunoco Spirits dries evenly and completely—leaves no greasy residue.

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Bake-finishing Exterior Metal Signs

by C. DAN YOUNGS

IN BAKING metal signs which are intended for exterior exposure, there are many important features to watch which do not appear in other classes of bake-finishing.

Not every type or class of baking enamel can be used, since a difference in the oils will usually make one that is excellent for interior usage absolutely worthless when used for outside exposures. The oils or other vehicles must possess within themselves the quality of weather resistance and sufficient flexibility to withstand the expansion and contraction caused by temperature changes.

Since baking presupposes the use of an oleoresinous or a synthetic type of finish, rather than one of a nitrocellulose base, it is essential that the ingredients used in the manufacture of the finish be of a type which will successfully withstand the actions of the elements—sun, rain, cold, or excessive heat, without peeling, checking or, as is common, alligatoring.

The matter of flexibility comes next in importance; a sign that gives the best results for its intended purpose should withstand the bending test. This is done by bending the sign back and forth a number of times without causing any separation of the finish films from the metal. Of course this test particularly applies to signs coated on the lighter weight metals, since 20-gauge or heavier iron cannot be readily bent. But the lighter signs, especially of 26 or 28-gauge iron should show a breakage of the metal before the finish material film will break.

In actual service such a test is never received, but it shows the ability to withstand violent blows, and that the film is such that it will resist any similar severe service. This is particularly valuable in the case of highway signs, direction markers or truck signs which are apt to be bent at times by such forcible means. The ability to straighten a sign after such bending is a valuable adjunct to the owner, since it often saves the purchase of replacement signs.

Another feature, equally important if the sign manufacturer anticipates repeat business, is that the colors used must be non-fading. A sign that stands up outside for only a year or two, and then appears dingy and faded is a poor advertisement for the manufacturer. Reds and greens, being as a rule the contrast colors in sign manufacture, are especially im-

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Four years of careful and intensive research have gone into our perfected system of lacquer finishes for Presdwood and Celotex.

These extraordinarily adaptable surfaces are becoming more and more widely used in industry. Their finishing presents certain definite problems - we have the answer.

Makers of tile, cabinets, boats, toys, refrigerators and any other industrial production utilizing these boards, will find it profitable to consult us.

Write for our new descriptive bulletin

THE VARNISH PRODUCTS CO.

CLEVELAND, OHIO

Superior Galvannealed PATENTED PROCESS

"Superior Super-Metal" PATENTED PROCESS

Two RUST-RESISTING Steel Sheets Coated with Spelter (Zinc) and Heat-Treated after being Coated. Have Etched Surfaces to which Finishes Adhere Firmly.

Sample and Booklet on Request

The SUPERIOR SHEET STEEL COMPANY
CANTON, OHIO

Division of Continental Steel Corporation — General Offices, Kokomo, Indiana
Plants at — Kokomo, Indianapolis, Canton.

Manufacturers of: Black, Galvanized, Long-Terne and Special Coated Sheets, Roofing and Kindred Products; Billets, Rods, Wire, Nails and all types of Fence. (133)

portant; a red that has faded to a dirty brown, or a green that appears to be powdered with white—either will present an unsightly appearance.

The cost of non-fading colors is but little more than that of the cheaper colors when estimated on a square foot basis and, like all other finishing materials, it is far cheaper when figured on the life of the product rather than the initial cost.

Ability to withstand corrosion and rusting is another important element in the manufacturing of exterior signs, since dampness, if permitted to get under the finish film, will eventually force the film off the metal.

This feature can be controlled in two ways: (1) by the use of galvannealed metal which is rustproof, and (2) by seeing that every portion of the sign, edges as well as flat surfaces, is completely covered by the finish. Edges are highly important, since unprotected edges offer the opportunity for moisture to creep under the finish as soon as rust appears on the edges, and since the usual sign is placed in a vertical position.

As is the case in all metal finishing, the priming coat is of utmost importance, since it forms the bond between the bare metal and succeeding coats. If this does not possess adhesion, and if the priming coat gives way, there is no possibility of saving the other coats. Good primers may now be secured in standard colors which offer little resistance to the covering ability of the following coat, no matter what shade it is, but a black or gray primer is most often used. Where the background is to be white, it is best to use a white primer and secure additional covering ability.

A matter, often overlooked or neglected because of the cost of an additional operation, is the use of a clear finish for the last coat. This acts as an additional protection to the color coat since being a film, even though transparent, it gives at least an additional year of life to the sign. It is well worth the additional cost because of added protection.

Since the labor involved in hand-painted signs is too great to permit mass production, the bake-finished metal sign has a most prominent place in outdoor advertising or direction marking. With the exception of porcelain signs perhaps, there is no other type which will stand outside exposure for so long a time and give the necessary attributes of adhesion, flexibility and service.

In this article I have not touched upon lacquer signs, since fundamentally they are entirely different in manufacturing process to bake-finishing. Certain firms are making lacquer which is extremely serviceable for outdoor signs, but there are also many lacquers marketed which will not stand up during a year of exposure to the elements.

But, as Kipling says, "that is another story," which may be touched upon in a later article.

Good lacquers require good materials, especially reliable solvents and thinners.

Innes Transfers Gum Dept.

The O. G. Innes Corporation, 132 Front St., New York City, announces that the entire staff of Innes & Co., Inc.'s Gum Department (New York City) as well as foreign connections, has been transferred to the O. G. Innes Corporation, which will continue the Gum Department that Innes & Co., Inc., have had for the past quarter of a century under the guidance of O. G. Innes.

IMPERVIOUS

LACQUERS, VARNISHES and ENAMELS

FOR INDUSTRIAL USE

Manufactured By

IMPERVIOUS VARNISH COMPANY

General Office: Koppers Building
PITTSBURGH, PA.

PEARL LACQUERS

A new decorative finish that stimulates sales. A beautiful silvery pearl finish over Lacquer Enamels creates instant appeal on Hardware, Brushes, Household Appliances, Caskets or Celluloid articles.

Tell us in your inquiry on what articles you consider its use, so that we may send you recommendations and quotations.

MAAS & WALDSTEIN COMPANY

Executive Offices and Plant

430 Riverside Ave. Newark, N. J.

Chicago Office & Warehouse
1115 W. Washington Blvd.

Los Angeles Office & Warehouse
2416 Enterprise Street

Electrical Equipment Bake-Finished

Pressed metal
Burn-off ovens
Conveyors
Japanning
Ventilation

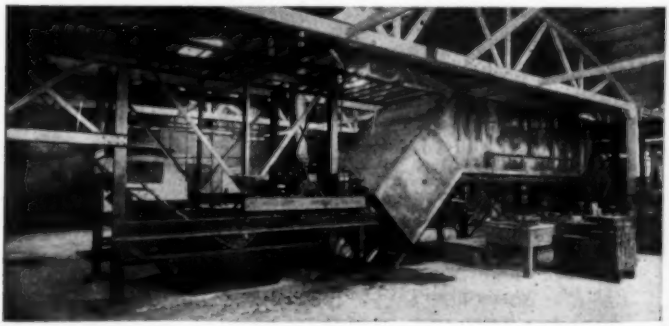
*by WM. J. MISKELLA**

THE attractive, black-japanned steel surface chosen as the standard finish for electrical installation accessories, such as control boards, motor control devices, fittings and similar products, has long since proved its practicability. The production layout for applying this type of finish in one of the plants I have in mind, is worthy of note, in that there is a wide diversity of products handled in the same general way. Many operations are required which are radically different in character. Yet, in this plant there are no indications of lost motion or counterflow of product in process, and no noticeable congestion in the transition of materials from the raw state to the finished product. The entire plan calls for straight-line production from the very start until the parts are actually boxed and on railway cars en route to customers.

In general, there are two sizes of material used; No. 10 and 16 gauge, depending upon the building code standards which determine the dimensions of the equipment used in each locality.

From the temporary storage space the sheets are routed to the shearing machines, where they are cut into strips and otherwise

*Colorist & Finishing Consultant.

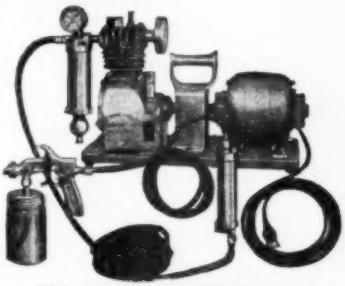


Sharpe Portable Spray Machine

Mr. Manufacturer:

HERE is just the Machine to refinish your products, whether they be Refrigerators, Radio Cabinets, Furniture or what not.

No manufacturer or Distributor should be without a SHARPE 1-N Direct Drive Spray Machine as an auxiliary to his large compressor. Ideal for refinishing and lays on a fast even coverage comparable to large machines. Small investment but big results.



Write for Details and Refinishing Suggestions.
Paint Distributors Inquiries Solicited

THE SHARPE MANUFACTURING CO.

1356 So. Flower Street, LOS ANGELES
San Francisco Chicago
Also Fox Smith Co., 98 5th Ave., New York

The TAYLOR SYSTEM of COLOR HARMONY

COLOR HARMONY exerts a powerful influence on sales of finished articles—
. . . and the Taylor System of Color Harmony solves the problem of selecting color combinations easily, quickly and always harmoniously. This system is based on fundamental, natural color laws, but is reduced to such simple chart form, that anyone can readily understand and use it—there are no books to read—it's right before you in color.

No waiting. No guessing. You simply select the base color for your scheme and the Taylor Keyboard automatically shows all the colors that harmonize with your base color. *Discords of color cannot appear through the mask.*

Chart "A" of the Taylor Color Harmony Keyboard is 22 x 15 inches and shows 96 different colors. It is accompanied by two black cardboard masks which can be adjusted to show four different tones of each color. Price $5.00.

Practical Publications, Inc.

802 Wulsin Bldg., Indianapolis, Ind.

trimmed for further fabrication. Passing progressively from the heavy presses, the light presses, etc., until all forming and punching operations are performed, the parts are sent to the second floor for final machining and finishing. The switchbox parts and the square ducts are finished in black japan, while the panel boards are finished either in black japan or in lacquer, depending upon their size and ultimate use.

The japanning is done in a room 80x20-ft., with a clearance of 12-ft. between floor and ceiling, and separated from the rest of the plant by a brick wall and fire doors. A continuous burn-off oven and a continuous japanning oven are included in the equipment of this department; also the usual auxiliary equipment, handling and safety appliances.

All parts entering the finishing department are first sent through the burn-off oven, where they are subjected to a temperature of 650° F. in order to remove all lubricating oil, grit and other foreign matter on the surfaces of the metal. This oven is gas-heated, and is of the horizontal trapped-end type. It is 60-ft. long, 5-ft. high, and 6-ft. wide inside. It is equipped with a No. 12 wire mesh belt (spaced in 1½-in. squares) with a speed of 4-ft. per minute. Standard pipe burners are located along the floor of the baking chamber just under the wire belt.

Alongside of and parallel to the burn-off oven is the japanning oven, which is of the single-compartment, continuous type, 10-ft. wide, 32-ft. long, and 5-ft. high. Like the burn-off oven, it is also provided with trapped ends which effect a natural heat seal, the latter preventing escape of the heat within the oven. Heat has a tendency to rise and, therefore, cannot escape when these oven ends are inclined downward.

The oven bodies are built of sectional panels, highly insulated and fabricated from copper-bearing sheet steel. The non-powdering insulation is securely held between the side members of the panels so as to prevent settling or the development of open joints regardless of the service rendered by these two ovens.

The panel edges are fabricated, using steel channels insulated from the panel side. This limits as much as possible the conduction losses which might otherwise occur between the interior and exterior of the oven. The erected panels form a flexible telescopic joint which automatically takes up the expansion and contraction

Pioneer Builders Of Air Heaters
NICHOLS PRODUCTS CORPORATION
12953 Greeley Ave., Detroit
122 East 42nd Street New York
DIVISION OF ROSS INDUSTRIES CORP.

INDUSTRIAL OVENS AND HEATERS
FOR ENAMELING, JAPANNING, LACQUERING, CORE BAKING, TEMPERING, PROCESS BAKEING AND DRYING.
—SPECIAL OVENS—
FOR EVERY FUEL AND HANDLING METHOD. WRITE FOR DETAILS.
The PAUL MAEHLER COMPANY
2220 W. Lake St., Chicago, Ill.

incident to repeated operating cycles, and remains heat- and dust-tight at all ordinary operating temperatures.

This oven is served by a double chain conveyor onto which work is suspended and automatically carried through the dip tank, over the drain boards and on into the oven proper. Incidentally, the japanning oven conveyor moves in a direction opposite to that of the burn-off oven. Due to this arrangement, the work taken from the delivery end of the burn-off oven is, after a 45-minute cooling period, loaded onto the japanning oven conveyor. The entrance to the japanning oven is directly opposite to the delivery end of the burn-off oven.

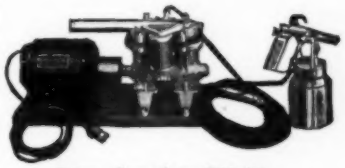
Like the burn-off oven, the japanning oven is gas-heated. It has five indirect-type gas heaters located in the floor and sides of the heating chamber. City gas of 550-B.t.u. is used. The operating temperature is 450° F., maintained by two controllers with a range of from 40° to 800° F.

The oven is mechanically ventilated by a 1-h.p., 25-in. fan leading to a 16-in. stack installed outside the building. A maximum of 45,000-cu.ft. of free air per hour can be supplied. Thus, all fumes are removed, and there is no clouded atmosphere in the japanning room.

The entire operation of the japanning department is performed by four men, one being located at each end of the burn-off oven, and one at each end of the japanning unit.

When the finished parts leave the japanning oven they are sent either to the tapping department, where the necessary tapped holes are taken care of, or they are loaded on floor skids for delivery to the assembly department on the top floor of the plant.

SUPER SPRA-MORE "55"



Price, Complete, $70.00

Greater painting power than any other portable spray painting equipment in its price class! This fact may be quickly proved by a demonstration in your own finishing department, with any type of material, on any kind of surface. Let us send you the complete story. It may enable you to substantially reduce finishing costs. Write today.

CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd. Los Angeles, Calif

Boston, 105 Broad St.; Newark, N. J., 1057 Bergen St.; Chicago, 551 W. Lake St.; Houston, 1027 E. 11th St.

The Cincinnati Varnish Co., Inc.
(Established 1865)
Division of The Foy Paint Co.
Cincinnati, Ohio
Manufacturers of
DEPENDABLE INDUSTRIAL FINISHES
Varnishes • Paints • Enamels
Japans • Stains • Lacquers
Special Finishes
OUR PRICES WILL INTEREST YOU

Where this particular installation has proved to be very efficient for the uses outlined, it is possible that the same plan might be a liability unless it were so equipped and handled as to suit the operating conditions in another plant. Perhaps no other industry requires such specific oven installations to fit each individual case. The most efficient, when properly designed, take into consideration all the limiting factors of each plant and those of the particular products being handled. This accounts for the great variation in oven types and in the methods of installing them. Each installation has its own peculiar advantages and limitations.—*Industrial Gas.*

Obsolescence may arise because of changes in the product of competitors.

ALAKA

Flat Wood Lacquer No. 810 is a flat wood lacquer that stays *flat*

A manufacturer of high grade furniture* wanted to give his maple line that rich, rubbed, velvety finish so much in demand. He tried out a flat wood lacquer. The finish looked fine but didn't stand up — the parts most used went shiny. He used another flat wood lacquer and still another, but their flatness was very short-lived. He stopped using flat wood lacquer until we mixed Alaka No. 810 for him. He has used it three years now and says he'll continue to use it until it loses its flatness. But of course it never will. May we send a sample can?

**Name on request.*

LACQUER & CHEMICAL CORPORATION
Makers of ALAKA Lacquer

BROOKLYN, N. Y.
214-224 40TH ST.
SUNSET 6-4864-5-6

CHICAGO BRANCH
2539 W. LAKE ST.
WEST 2043-4

Letters

Englishman Rottenly Informed

I always read your paper with great interest. Synthetics seem to predominate at the present. In the last two or three issues great emphasis has been given to alcohol-proof mixtures.

We here have been left to understand that alcohol in hotels, clubs, households, etc., as advertised in INDUSTRIAL FINISHING, should not be available.

Here in England we are allowed to purchase alcohol-and-water (mostly the latter!!) by paying 8/2½ per bottle duty—poor stuff. You are regaled (so we hear) with lemonade and similar medicines.

No one advertises constantly any product for which there is no call. If lacquer that will stand against 100% alcohol-proof spillings in clubs, etc., as advertised and sold for such purposes, all I can say is that we are a rottenly informed people as to the soft drink trade of America.—Archibald Vickery, Sussex, England.

Editor's Note—Alcoholic spillings can include perfumes, extracts, medicines, and compounds used for purposes other than drinking.

More Improved Finishing

In reading March issue of INDUSTRIAL FINISHING, I agree with the letter of "E.B.S." as to the finishes that have been put on the market for the past number of years, and I can see now is the time to commence the improvement of real finishes.

In the past there has been a great tendency to get the product to the consumer's market regardless of quality in finish, so long as they got it quick, but in time the finisher had to suffer for the wearing and lasting qualities of the products finished.

He could not help himself in any way, and now is the time to remedy all that has past by getting together as a body, and building up the quality of finishes as they were before the "Hurry and Any Old" way came into practice. Let's get back to Quality. I do not mean we have to slow down, for I am a great believer and practicer of progress and new ideas, and we have plenty of them at the present time if we would

only take a little of our knowledge and experience to give them a good work-out, which will produce quality in the end.

Many a firm has lost customers by giving them "hasty goods" and lack of quality. Quantity and quality never came out in a race equal. We have finishers at the present day who have experience, and could remedy the past, and they will if given the opportunity which is greatly needed at the present time. If we all get together and pull for better finishes in the future we will overcome the lack of better finishes and give the customer his full value in the finish. This also will improve the sales of the firms that are employing us, and have a great influence in making them successful in their business.

Now is the time that firms can adjust this great fault and commence to build up this standard by better qualities. Agreed that finishes do not sell all goods, but they sell the most of them if quality of finishing is found with them. I have been in the finishing game for the past 25 years as foreman finisher of large firms manufacturing products in both wood and metals, in air-drying and baking finishes.—L. A. Van Arnam.

Cleaning Automobile Bodies

In the "Questions and Answers" of the March issue number of INDUSTRIAL FINISHING, on page 38, we note that the T. S. & S. Co., has asked certain questions with reference to the process for cleaning automobile bodies, which is obviously our Parcolite Process. This question was answered by Jack Davis. In general, we feel that the information he has supplied is quite accurate, but there are certain statements that we feel should be cleared up.

Parcolite, although only recently developed, is being used successfully by Dodge, by Studebaker on the Rockne line, by Hupp, and by Graham-Paige. During our research and practical preliminary work, we investigated very thoroughly whether or not there was any acid left on the surface of the metal after the inert material was brushed off, and it was found that the resultant coating was neutral. After the brushing is completed, there is no film of loose material left on the surface that would interfere with the adherence. —Parker Rust-Proof Co., Detroit.

A current investigation regarding feminine color choice for a particular product showed the following: College girls chose blue as their preference, business girls chose green, and factory girls had a preference for rose-pink—and the product for which this investigation was made has been produced in red color for years.

Here is the first authoritative handbook of its kind. PRACTICAL JAPANNING and ENAMELING contains much information that has never before been published. You will find between its covers facts, processes, and formulae that have been considered secret by many japanners.

The author has actually been doing this work for others for many years and he knows whereof he speaks. No one has ever gone into the subject of metal finishing more deeply than he nor has the subject ever been explained so clearly and effectively. This book was eight years in preparation.

Color plates and a multitude of tables and illustrations make the text even more clear and understandable. The volume is bound in harmony with its companions of the Practical Finishing Series and makes a rich, attractive appearance. . . 22 chapters.

Price $3.50 . . . . *money refunded if book is not satisfactory*

Practical Publications, Inc.

802 Wulsin Bldg.
Indianapolis, Indiana

Industrial Finishing
MAGAZINE

Issued fifteenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

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Advertising rates on application.

EDITORIAL

Finishing Craftsmanship

All fields of labor in the network of industry have their craftsmen who do, in varying ways, the work their trade demands. Most crafts or trades have definitely prescribed ways of performing certain operations, and no deviation from this standard is permitted.

Among these crafts, the industrial finisher is in a unique position, since his work not only calls for procedure along established lines as a fundamental basis, but from there on he has thousands and thousands of opportunities to study and improve his workmanship. The finisher who is a student of his trade is able to keep closely in touch with new developments both along new materials and labor-saving devices by means of the excellent trade journals devoted to his work, and from these he can obtain ideas applicable to his own work which will show his superiors that he is "thinking beyond his job."

He is often called upon to experiment with certain desired effects in finishing—to attempt the mixing and formulation of distinctive designs which will make his firm stand out at the head of its competitors—and if he is really a student of his craft, he is able to render satisfaction to his superiors in ways entirely apart from his standardized daily work.

It is probable that the craft of industrial finishing stands head and shoulders above other crafts in the ability to render distinctive service, and proud indeed should the man be who is well versed in this craft.

Demonstrate Novel Finishes

New developments in spray guns and spray gun heads, together with late discoveries in the possibilities of lacquer, have made possible a variety of novel finishes that add interest and charm to the interior of modern homes. Although a number of these new textural finishes can be modified by the spraying consistency of the lacquer, the majority and the most attractive are produced by different types of spray gun heads which are designed specifically for that purpose—for example, veiling and spattering effects.

These results now possible with spray painting equipment are so phenomenal that painters remain skeptical until actual proof of the new finishes is submitted. As a result, practical demonstrations on all phases of interior painting and decorating effects are being given in 16 cities throughout Illinois, Iowa, Missouri, Nebraska, Minnesota and

Wisconsin, under the direction of the interior decorating research laboratory of one of the industry's largest spray gun manufacturers. The demonstrator is director of the laboratory and he makes these applications very interesting through the use of portable interior painting and decorating equipment, which he carries with him is a specially constructed truck.

These demonstrations are conducted free of charge in the cities visited, and they show the application of textured material by the spray process, the sizing and glazing of textured surfaces, spattering, veiling, blending and stenciling by the spray method, the glaze application and hand mottled work and the application of solid coatings and plain work.

Early American Colors Popular

The vogue for the Colonial and military types in all manner of manufactured articles is responsible for a special collection of colors of Colonial times issued by the Textile Color Card Assn., New York City, in cooperation with the U. S. George Washington Bicentennial Commission. The colors, 16 in number, have been reproduced from original costumes worn by George and Martha Washington and other eminent personages in early American history. These colors have been reproduced from the famous costume collection on exhibition in the U. S. National Museum and are therefore authentic and historically correct. The 16 colors have been presented in the form of a historical brochure by the association.

Four colors strike a patriotic note: the George Washington blue and the buff which are exact shades of Washington's uniform; the Star-Spangled banner red and the blue, both of which are the colors in their mellowed beauty as they are today in the original garrison flag of Fort Henry, now in the National Museum at Washington. The remaining 12 colors are coral, green, orchid, rose, gold, pink, an aquamarine blue, yellow, a slightly violet-tinted blue, brown, a bluish-cast green, red. These are taken from authentic costumes of famous persons in the early history of the U. S.

These colors are most attractive as well as historically correct and it is expected they will prove a strong stimulus to fashion trades this year.

STRAINERS for cleaning small batches of finishing materials can now be obtained at small cost in packages of 100.

"Air in the Realm of Art"

The Paasche Airbrush Co., 1921 Diversey Parkway, Chicago, Ill., has just released a new and interesting 21-page, 7x10-in. booklet entitled "Air in the Realm of Art." This booklet is profusely illustrated, and unusually interesting in that it shows the ultimate possibilities of airbrushes. In addition to showing unique results obtainable by the airbrush in art, it shows a number of very desirable effects of novel finishes adaptable to industrial products.

New Pearl Essence Finish

Jos. H. Meyer Bros., 220, 25th St., New York City, announces that Richelieu Cloisonne—a new pearl essence finish—is now available for distribution. It is impossible to describe the product, so samples will be distributed to all those interested.

In writing for samples use your firm's letterhead, or state the nature of the product for which this finish is intended, so that the proper material may be shipped.

Some of the products on which Richelieu Cloisonne Pearl Essence is particularly attractive are caskets,

especially wooden ones, where applied over the cheaper lumber it can be made to simulate a beautiful hammered silver metal casket; also for automobile dashes, bed heads, radio cabinets, elevator doors, bathroom tiling, theatre paneling, serving trays, lamp shades, jewel boxes, furniture screens, hampers, baskets, picture frames, novelties, display backgrounds, etc.

Brevolite Officer Changes

The Brevolite Lacquer Co., North Chicago, Ill., announces the following changes in officers:

Mr. Edmond H. Bucy was elected vice president. During the last five years, Mr. Bucy has been in charge of research and development, and this will continue to be his special responsibility in addition to his other duties in the sales and manufacturing end.

Mr. Leonard L. Klewer, who has been secretary for the last two years, continues in this capacity and succeeds Emory H. Wilder as director. Mr. Klewer was for many years secretary and treasurer of Heath & Milligan Mfg. Co., Chicago. He also served in that capacity for the Waggener Paint & Glass Co., and later became vice president of the Condie-Bray Glass & Paint Co., St. Louis, Mo. Mr. Klewer is a brother of Otto W. Klewer, who is manager of John Lucas & Co., Inc., in Chicago.

Mr. Casper Apeland, one of the founders of the company, continues as president-treasurer and general manager. His brother, F. H. Apeland, is assistant treasurer, also acting in the capacity of purchasing agent and cost accountant.

Classified Advertising

Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

FINISHING FOREMAN

Desires position: several years' experience on high grade store, office and bank fixtures, antique and novelty furniture. Understands modern methods and production, matching colors and finishes. Can handle any number of men. Go anywhere. Address IF-421, care Industrial Finishing.

METAL HAND GRAINER

Desires position. Nineteen years' experience. Can do all kinds of graining; also all-round finisher. Can handle men and produce. Will go anywhere. Address IF-425, care Industrial Finishing.

POSITION WANTED

I am now employed but desire a new connection offering possibilities of expansion. Have had several years of diversified experience in the manufacture of lacquers, lacquer enamels and under coatings for use on all types of industrial products. Can take complete charge of formulation and production. Address IF-424, care Industrial Finishing.

SAMPLE STAIN MAN WANTED

Experienced in matching wet samples and dry powders together with original ideas. State age, experience, whether employed at present and reference. Married man preferred. Address IF-426, care Industrial Finishing.

SALESMAN WANTED

Old established house looking for salesman with good following in the Lacquer trade. Exceptional opportunity for good man. Only those qualified will receive consideration. Give experience in writing. Address IF-423, care Industrial Finishing.

SALESMAN INDUSTRIAL FINISHES WANTED

Cleveland manufacturer desires representative for central New York territory with headquarters in Syracuse or Rochester. Must have good record and acquaintance with trade. Address IF-427, care Industrial Finishing.

BARGAINS

Demonstrator Paint Sprays, ½ price. Like new, guaranteed, factory reconditioned, gasoline or electric, completely equipped. 5-days' Trial—Money-back guarantee—one-fourth down, balance terms. KEN'S EQUIPMENT EXCHANGE, Box F-42, Troy, Ohio.

KEEPING A-PACE!

A new finishing effect is first observed in the retail stores before becoming generally known to the trade, then the rush begins. How is it obtained; where can the finishing material be purchased? Write Industrial Finishing magazine at Indianapolis, Indiana. Usually, the information is on file in our office, or it can be obtained in limited time. The publisher is glad to help.